

BORING LOCATION <u>511+44 R 34</u>				DATE START - FINISH <u>8/26/98-8/26/98</u>		<b>B1902</b>	
GROUND ELEVATION <u>141.5</u> DATUM <u>NGVD</u>				DRILLED BY <u>Maine Test Boring</u>			
GROUND WATER EL. <u>    </u> DATE <u>    </u>				LOGGED BY <u>Brian F. Jankauskas</u>		TOTAL DEPTH (Ft.) <u>65.2</u>	
Page 3 of 3							

DEPTH FT.	SAMPLE				SOIL AND ROCK DESCRIPTIONS	FIELD TESTS	STRATUM DESCRIP.	Remarks
	TYPE & NO.	BLOWS / 6 IN.	PEN ft.	REC ft.				
60	S13	100/ 0.3	0.3	0.1	SILTY SAND (SM) Narrowly graded. Mostly fine sand, ~20% non-plastic fines, gray.  Possible Cobble @ 62.8'			
65					Bedrock or Boulder @ 64.5' <span style="float: right;">64.5'</span> Roller bit from 64.5' to 65.2'. Cuttings similar to bedrock core at adjacent borings. <span style="float: right;">65.2'</span>			
					Bottom of Boring 65.2'			
70								
75								
80								
85								
90								

BLOWS PER 6 IN. - 140 LB. HAMMER FALLING 30 IN. TO DRIVE A 2.0 IN. OD SPLIT SPOON SAMPLER WOH-WEIGHT OF RODS WOH-WEIGHT OF RODS AND HAMMER PEN-PENETRATION LENGTH OF SAMPLER OR CORE BARREL REC-LENGTH OF RECOVERED SAMPLE RQD-LENGTH OF SOUND CORE SECTIONS > 4 IN./LENGTH CORED. % S-SPLIT SPOON SAMPLE      Sv-TORVANEQp-PENETROMETER U-UNDISTURBED SAMPLE <u>  </u> GROUND WATER	Notes:          <div style="display: flex; justify-content: space-between; align-items: center;"> <div style="width: 60%;">Broad Street Parkway</div> <div style="width: 35%; text-align: right;">           GEI Consultants, Inc.            Project 98217         </div> </div>
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BORING LOCATION <u>510+64 R 35</u>					DATE START - FINISH <u>8/24/98-8/25/98</u>			<b>B1903</b>		
GROUND ELEVATION <u>131.0</u> DATUM <u>NGVD</u>					DRILLED BY <u>Maine Test Boring</u>					
GROUND WATER EL. <u>      </u> DATE <u>      </u>					LOGGED BY <u>Brian F. Jankauskas</u>			TOTAL DEPTH (Ft.) <u>70.8</u>		
DEPTH FT.		SAMPLE				SOIL AND ROCK DESCRIPTIONS	FIELD TESTS	STRATUM DESCRIP.	Remarks	
		TYPE & NO.	BLOWS / 6 IN.	PEN #	REC #					
0	S1	1-1 4-8	2	1	Upper 0.7' TOPSOIL Lower 0.3' SAND (SP) Narrowly graded. Mostly fine sand, <5% non-plastic fines, brown. FILL.	0.7'		FILL		
5	S2	7-8 11-13	2	0.5	Upper 0.3' SAND (SP) Narrowly graded. Mostly fine sand, <5% non-plastic fines, gray/brown. Lower 0.2' SAND WITH GRAVEL (SP) Narrowly graded. Mostly fine to medium sand, 20% fine rounded gravel, <5% non-plastic fines, orange.	5.0'				
10	S3	13-10 6-7	2	0.7	SAND WITH GRAVEL (SW) Widely graded. Mostly fine to coarse sand, ~20% fine gravel, <5% non-plastic fines, orange/brown.					
15	S4	10-7 7-6	2	0.5	SAND WITH GRAVEL (SW) Widely graded. Mostly fine to coarse sand, ~30% fine gravel, <5% non-plastic fines, orange/brown.			SAND AND SAND WITH GRAVEL		
20	S5	14-11 8-9	2	0.2	SAND WITH GRAVEL (SP) Narrowly graded. Mostly coarse sand, ~15% fine gravel, <5% non-plastic fines, gray.					
25	S6	16-16 15-19	2	0.8	SAND (SP) Narrowly graded. Mostly fine sand, <5% non-plastic fines, brown, distinct layers, brown/light brown.					
30										
BLOWS PER 6 IN. - 140 LB. HAMMER FALLING 30 IN. TO DRIVE A 2.0 IN. OD SPLIT SPOON SAMPLER WOH-WEIGHT OF RODS WOH-WEIGHT OF RODS AND HAMMER PEN-PENETRATION LENGTH OF SAMPLER OR CORE BARREL REC-LENGTH OF RECOVERED SAMPLE RQD-LENGTH OF SOUND CORE SECTIONS > 4 IN./LENGTH CORED, % S-SPLIT SPOON SAMPLE    Sv-TORVANE    Qp-PENETROMETER U-UNDISTURBED SAMPLE    V- GROUND WATER						Notes:				
						Cased (driven) wash boring.				
						Broad Street Parkway		GEI Consultants, Inc. Project 98217		

BORING LOCATION <u>510+64 R 35</u>				DATE START - FINISH <u>8/24/98-8/25/98</u>				<b>B1903</b>	
GROUND ELEVATION <u>131.0</u> DATUM <u>NGVD</u>				DRILLED BY <u>Maine Test Boring</u>					
GROUND WATER EL. <u>      </u> DATE <u>      </u>				LOGGED BY <u>Brian F. Jankauskas</u>				TOTAL DEPTH (Ft.) <u>70.8</u>	
								Page 2 of 3	

DEPTH FT.	SAMPLE				SOIL AND ROCK DESCRIPTIONS	FIELD TESTS	STRATUM DESCRIP.	Remarks
	TYPE & NO.	BLOWS / 6 IN.	PEN in.	REC in.				
30	S7	6-7 9-12	2	0.9	SAND (SP) Narrowly graded. Mostly fine sand, <5% non-plastic fines, distinct layer, brown/light brown.		SAND AND SAND WITH GRAVEL	
35	S8	17-20 22-18	2	1.1	SAND WITH GRAVEL (SP) Narrowly graded. Mostly fine sand, ~15% rounded fine gravel, ~15% non-plastic fines, gray.			
40	S9	28-22 20-21	2	1.1	SAND WITH GRAVEL (SP) Narrowly graded. Mostly fine sand, ~15% angular fine gravel, ~5% non-plastic fines, gray.			
45	S10	48-38 43-53	2	0.4	SAND (SW) Widely graded. Mostly fine to coarse sand, 5% angular fine gravel, <5% non-plastic fines, gray.			
50	S11	24-22 48-100 /0.3	1.8	1.1	SAND WITH GRAVEL (SP) Narrowly graded. Mostly fine sand, ~15% angular to subrounded fine gravel, <5% non-plastic fines, gray/brown. Cobble from 51.8' to 52.3'			
52.3	R1	2 min 4 min 2/0.2 2 min /0.2	2.2	0.8	Fine to coarse gravel, subangular and subrounded.			
55								
55.4	S12	100 /0.2	0.2	0.2	Cobble from 54.8' to 55.2' SAND (SP) Narrowly graded. Mostly fine sand, <5% non-plastic fines, gray/brown.		GLACIAL TILL	
55.6								
57.6	R2	4 min	4.6	2.8	Upper 0.4' - Cobble From 57.6' to 58.0' Middle 0.6' - Rounded Coarse Gravel			
60		4 min						

BLOWS PER 6 IN. - 140 LB. HAMMER FALLING 30 IN. TO DRIVE A 2.0 IN. OD SPLIT SPOON SAMPLER WOH-WEIGHT OF RODS WOH-WEIGHT OF RODS AND HAMMER PEN-PENETRATION LENGTH OF SAMPLER OR CORE BARREL REC-LENGTH OF RECOVERED SAMPLE RQD-LENGTH OF SOUND CORE SECTIONS > 4 IN./LENGTH CORED. % S-SPLIT SPOON SAMPLE      Sv-TORVANE      Qp-PENETROMETER U-UNDISTURBED SAMPLE      V- GROUND WATER	Notes:          <div style="display: flex; justify-content: space-between; align-items: center;"> <div style="width: 60%;">Broad Street Parkway</div> <div style="width: 35%; text-align: right;">           GEI Consultants, Inc.            Project 98217         </div> </div>
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BORING LOCATION <u>510+64 R 35</u>				DATE START - FINISH <u>8/24/98-8/25/98</u>		<b>B1903</b>	
GROUND ELEVATION <u>131.0</u> DATUM <u>NGVD</u>				DRILLED BY <u>Maine Test Boring</u>			
GROUND WATER EL. <u>      </u> DATE <u>      </u>				LOGGED BY <u>Brian F. Jankauskas</u>		TOTAL DEPTH (Ft.) <u>70.8</u>	
Page 3 of 3							

DEPTH FT.	SAMPLE				SOIL AND ROCK DESCRIPTIONS	FIELD TESTS	STRATUM DESCRIP.	Remarks
	TYPE & NO.	BLOWS / 6 IN.	PEN n.	REC ft.				
60		7 min			60.4'			
60.4	R2	12 min 9 min /0.6	4.6	2.8	Lower 1.8' - META SEDIMENTARY. Slightly weathered, Fractures dipping at 30, 45, 60, and 70 degrees from the horizontal, spaced from 1/2" to 3" apart. RQD=0%			
62.2	R3	9 min 12 min 9 min 16 min /0.8	3.8	3.8	META SEDIMENTARY. Slightly weathered, Fractures dipping at 0, 30, 45, and 60 degrees from the horizontal, spaced from 1" to 10" apart RQD=78%			
65								
66.0	R4	15 min 9 min /0.8	1.8	1.7	META SEDIMENTARY. Slightly weathered, Fractures dipping at 10, 30, 50, and 75 degrees from the horizontal, spaced from 3" to 6" apart. RQD=49%		BEDROCK	
67.8	R5	7 min 7 min 9 min	3.0	2.9	META SEDIMENTARY. Slightly weathered, Fractures dipping at 5, 15, 20, 30, and 65 degrees from the horizontal, spaced 1/2" to 11" apart. RQD=75%			
70					70.8'			
					Bottom of Boring 70.8'			
75								
80								
85								
90								

BLOWS PER 6 IN. - 140 LB. HAMMER FALLING 30 IN. TO DRIVE A 2.0 IN. OD SPLIT SPOON SAMPLER WOR-WEIGHT OF RODS WOH-WEIGHT OF RODS AND HAMMER PEN-PENETRATION LENGTH OF SAMPLER OR CORE BARREL REC-LENGTH OF RECOVERED SAMPLE RQD-LENGTH OF SOUND CORE SECTIONS > 4 IN./LENGTH CORED, % S-SPLIT SPOON SAMPLE      Sv-TORVANE      Qp-PENETROMETER U-UNDISTURBED SAMPLE      V- GROUND WATER	Notes:          <div style="display: flex; justify-content: space-between; align-items: center; padding-top: 10px;"> <span>Broad Street Parkway</span> <span>Φ GEI Consultants, Inc. Project 98217</span> </div>
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BORING LOCATION <u>509+94 R 30</u>				DATE START - FINISH <u>8/19/98 - 8/19/98</u>				<b>B1904</b>	
GROUND ELEVATION <u>143.3</u> DATUM <u>NGVD</u>				DRILLED BY <u>Maine Test Boring</u>				Page 1 of 3	
GROUND WATER EL. _____ DATE _____				LOGGED BY <u>Brian F. Jankauskas</u> TOTAL DEPTH (Ft.) <u>77.5</u>					

DEPTH FT.	SAMPLE				SOIL AND ROCK DESCRIPTIONS	FIELD TESTS	STRATUM DESCRIP.	Remarks
	TYPE & NO.	BLOWS / 6 IN.	PEN R.	REC R.				
0	S1	1-28 /0.4	0.9	0.6	Upper 0.3'- TOPSOIL Lower 0.3'- SAND (SP) Narrowly graded. Mostly fine sand, <5% non-plastic fines, brown, small pieces of concrete. FILL. Concrete from 0.9' to 1.4'.		TOPSOIL	
5	S2	7-7 7-7	2	0.5	SILTY SAND (SM) Narrowly graded. Mostly fine sand, 10-15% non-plastic fines, angular gravel, brown. FILL.		FILL	
10	S3	7-4 7-10	2	1.3	SILTY SAND (SM) Narrowly graded. Mostly fine sand, 20% non-plastic fines, brown with thin orange layers.			
15	S4	5-5 10-19	2	1.2	SILTY SAND (SM) Narrowly graded. Mostly fine sand, 15-20% non-plastic fines, brown, orange, and gray layers.		SILTY SAND AND SAND WITH GRAVEL	
20	S5	22-19 15-13	2	0.9	SAND WITH GRAVEL (SP) Narrowly graded. Mostly medium sand, 25% angular to rounded fine gravel, <5% non-plastic fines, upper 0.4' orange, bottom 0.5' brown.			
25	S6	12-10 8-9	2	0.7	SAND WITH GRAVEL (SW) Widely graded. Mostly fine to coarse sand, 20% sub-angular fine gravel, <5% non-plastic fines, brown.			
30								

BLOWS PER 6 IN. - 140 LB. HAMMER FALLING 30 IN. TO DRIVE A 2.0 IN. OD SPLIT SPOON SAMPLER WOR-WEIGHT OF RODS WOH-WEIGHT OF RODS AND HAMMER PEN-PENETRATION LENGTH OF SAMPLER OR CORE BARREL REC-LENGTH OF RECOVERED SAMPLE RQD-LENGTH OF SOUND CORE SECTIONS > 4 IN./LENGTH CORED, % S-SPLIT SPOON SAMPLE Sv-TORVANE Qp-PENETROMETER U-UNDISTURBED SAMPLE V GROUND WATER	Notes: Auger from 0 to 5'. Cased (drive) wash boring from 5' to 77.5.  <div style="display: flex; justify-content: space-between;"> <span>Broad Street Parkway</span> <span>Φ GEI Consultants, Inc. Project 98217</span> </div>
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BORING LOCATION <u>91+06 L 30</u>				DATE START - FINISH <u>8/19/98 - 8/19/98</u>				<b>B1904</b>	
GROUND ELEVATION <u>143.3</u> DATUM <u>NGVD</u>				DRILLED BY <u>Maine Test Boring</u>					
GROUND WATER EL. <u>      </u> DATE <u>      </u>				LOGGED BY <u>Brian F. Jankauskas</u>				TOTAL DEPTH (Ft.) <u>77.5</u>	
Page 2 of 3									

DEPTH FT.	SAMPLE				SOIL AND ROCK DESCRIPTIONS	FIELD TESTS	STRATUM DESCRIP.	Remarks
	TYPE & NO.	BLOWS / 6 IN.	PEN ft.	REC ft.				
30	S7	10-8 9-12	2	0.6	SAND (SW) Widely graded. Mostly fine to coarse sand, <5% non-plastic fines, brown.			
35	S8	10-9 12-15	2	0.6	SAND (SP) Narrowly graded. Mostly medium sand, <5% non-plastic fines, brown.		SAND AND SAND WITH GRAVEL	
40	S9	10-14 11-14	2	0.5	SAND WITH GRAVEL (SW) Widely graded. Mostly fine to coarse sand, ~25% sub-angular gravel, <5% non- plastic fines, brown.			
45	S10	38-42 45-45	2	1.2	SAND WITH GRAVEL (SP) Narrowly graded. Mostly fine sand, ~35% angular fine gravel, ~5% non-plastic fines, brown. Glacial till.			
50 50.4	S11	43-36 33-68	2	0.9	SAND WITH GRAVEL (SP) Narrowly graded. Mostly fine sand, ~30% fine angular gravel, ~5% non-plastic fines, brown. Glacial till.		GLACIAL TILL	
52.4								
55 55.3	S12	23-22 22-32	2	1.0	SAND WITH SILT (SP-SM) Narrowly graded. Mostly fine to medium sand, ~10% angular fine gravel, 10% non-plastic fines, brown. Glacial till.			
57.3								
60								

BLOWS PER 6 IN. - 140 LB. HAMMER FALLING 30 IN. TO DRIVE A 2.0 IN. OD SPLIT SPOON SAMPLER WOH-WEIGHT OF RODS WOH-WEIGHT OF RODS AND HAMMER PEN-PENETRATION LENGTH OF SAMPLER OR CORE BARREL REC-LENGTH OF RECOVERED SAMPLE RQD-LENGTH OF SOUND CORE SECTIONS > 4 IN./LENGTH CORED, % S-SPLIT SPOON SAMPLE      Sv-TORVANE      Qp-PENETROMETER U-UNDISTURBED SAMPLE <u>  </u> GROUND WATER	Notes:          <div style="text-align: center;">Broad Street Parkway</div>
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BORING LOCATION <u>509+94 R 30</u>	DATE START - FINISH <u>8/19/98 - 8/19/98</u>	<b>B1904</b>
GROUND ELEVATION <u>143.3</u> DATUM <u>NGVD</u>	DRILLED BY <u>Maine Test Boring</u>	Page 3 of 3
GROUND WATER EL. _____ DATE _____	LOGGED BY <u>Brian F. Jankauskas</u> TOTAL DEPTH (Ft.) <u>77.5</u>	

DEPTH FT.	SAMPLE				SOIL AND ROCK DESCRIPTIONS	FIELD TESTS	STRATUM DESCRIP.	Remarks
	TYPE & NO.	BLOWS / 6 IN.	PEN q	REC q				
60	S13	22-58 23	1.5	0.5	SAND WITH GRAVEL (SP) Narrowly graded. Mostly fine to medium sand, ~15% fine angular gravel, <5% non-plastic fines. Glacial Till			
65	S14	95/ 0.25	0.25	0.1	GRAVEL (GP) Narrowly graded. Mostly fine angular gravel, <5% non-plastic fines, gray. Glacial Till		GLACIAL TILL	
70	S15	140/ 0.4	0.4	0.2	SAND (SP) Narrowly graded. Mostly fine sand, brown, <5% non-plastic fines. Glacial Till			
75	S16	115/ 0.4	0.4	0.3	GRAVEL WITH SAND (GW) Widely graded. Mostly fine to coarse angular gravel, 20% fine sand, ~5% non-plastic fines, brown. Glacial Till 76.2' Possible bedrock at 76.2', roller bit to 77.5'		POSSIBLE BEDROCK	
					77.5'			
					Bottom of Boring 77.5'			
80								
85								
90								

BLOWS PER 6 IN. - 140 LB. HAMMER FALLING 30 IN. TO DRIVE A  
 2.0 IN. OD SPLIT SPOON SAMPLER  
 WOR-WEIGHT OF RODS  
 WOH-WEIGHT OF RODS AND HAMMER  
 PEN-PENETRATION LENGTH OF SAMPLER OR CORE BARREL  
 REC-LENGTH OF RECOVERED SAMPLE  
 RQD-LENGTH OF SOUND CORE SECTIONS > 4 IN./LENGTH CORED, %  
 S-SPLIT SPOON SAMPLE Sv-TORVANE Qp-PENETROMETER  
 U-UNDISTURBED SAMPLE V GROUND WATER

Notes:

Broad Street Parkway

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BORING LOCATION <u>508+69 R 33</u>		DATE START - FINISH <u>7/27/98 - 7/30/98</u>		<b>B1905</b>	
GROUND ELEVATION <u>170.9</u> DATUM <u>NGVD</u>		DRILLED BY <u>Maine Test Boring</u>			
GROUND WATER EL. <u>122.7</u> DATE <u>8/19/98</u>		LOGGED BY <u>Brian F. Jankauskas</u>		TOTAL DEPTH (Ft.) <u>108.9</u>	
Page 1 of 4					

DEPTH FT.	SAMPLE				SOIL AND ROCK DESCRIPTIONS	FIELD TESTS	STRATUM DESCRIP.	Equipment Installation
	TYPE & NO.	BLOWS / 6 IN.	PEN ft.	REC ft.				
0	S1	42-23 25-15	2	1.1	Asphalt 0-0.4' SANDS (SW) Widely graded. Mostly fine to medium sand, 5-10% rounded gravel, <5% non-plastic fines, asphalt, brown. FILL.		ASPHALT	Road box cover installed in concrete surface seal to 1.0'
5	S2	4-3 4-4	2	0.9	SAND (SW) Widely graded. Mostly fine to coarse sand, 10-15% fine gravel, <5% non-plastic fines, brown, Bottom 1/2" of sample is stained black. FILL.		FILL	2" ID PVC well riser from 0' to 50'
10	S3	2-3 5-10	2	0.6	SAND WITH GRAVEL (SW) Widely graded. Mostly fine to medium sand, 15% subrounded fine gravel, <5% non-plastic fines, 1" of black-stained sand in nose of spoon. FILL.			
15	S4	3-3 3-5	2	0.6	SAND (SW) Widely graded. Mostly fine to medium sand, <5% non-plastic fines, brown.		SAND AND SAND WITH SILT	
20	S5	10-14 16-14	2	0.8	Upper 0.5' SAND (SW). Similar to S4. Lower 0.3' SAND (SP) Narrowly graded. Mostly fine sand, <5% non-plastic fines, brown.			Filter sand from 1' to 46.1'
25	S6	11-15 16-20	2	0.8	SAND (SP), similar to S5.			
30								

BLOWS PER 6 IN. - 140 LB. HAMMER FALLING 30 IN. TO DRIVE A 2.0 IN. OD SPLIT SPOON SAMPLER WOR-WEIGHT OF RODS WOH-WEIGHT OF RODS AND HAMMER PEN-PENETRATION LENGTH OF SAMPLER OR CORE BARREL REC-LENGTH OF RECOVERED SAMPLE RQD-LENGTH OF SOUND CORE SECTIONS > 4 IN./LENGTH CORED, % S-SPLIT SPOON SAMPLE    Sv-TORVANE    Qp-PENETROMETER U-UNDISTURBED SAMPLE    V- GROUND WATER	Notes:  Cased (driven) wash boring.
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BORING LOCATION <u>508+69 R 33</u>				DATE START - FINISH <u>7/27/98 - 7/30/98</u>				<b>B1905</b>	
GROUND ELEVATION <u>170.9</u> DATUM <u>NGVD</u>				DRILLED BY <u>Maine Test Boring</u>					
GROUND WATER EL. <u>122.7</u> DATE <u>8/19/98</u>				LOGGED BY <u>Brian F. Jankauskas</u>				TOTAL DEPTH (Ft.) <u>108.9</u>	
Page 2 of 4									

DEPTH FT.	SAMPLE				SOIL AND ROCK DESCRIPTIONS	FIELD TESTS	STRATUM DESCRIP.	Equipment Installation
	TYPE & NO.	BLOWS / 6 IN.	PEN #	REC #				
30	S7	20-21 18-25	2	0.8	SAND WITH SILT (SP-SM) Narrowly graded. Mostly fine sand, ~10% non-plastic fines, orange, light brown and gray layers alternating in unevenly spaced layers.		SAND AND SAND WITH SILT	
35	S8	17-19 26-26	2	0.8	SAND WITH SILT (SP-SM) Similar to S7.			
40	S9	21-23 31-28	2	0.9	SAND (SW) Widely graded. Mostly fine to medium sand, <5% non-plastic fines, brown.			
45	S10	22-24 32-45	2	1	SAND (SW) Widely graded. Mostly fine to coarse sand, ~10% gravel, <5% non-plastic fines, brown.			Filter sand from 1' to 46.1'
50	S11	14-15 25-35	2	0.1	GRAVEL WITH SAND (GP) Narrowly graded. Mostly angular fine gravel, 35% fine to coarse sand, <5% non-plastic fines, brown.			Bentonite chips from 46.1' to 48.7'
55	S12	11-14 16-21	2	0.9	SAND (SW) Widely graded. Mostly fine to coarse sand, ~10% gravel, <5% non-plastic fines, brown.		SAND WITH GRAVEL AND SAND	2" ID PVC well screen from 50' to 60'
60								

BLOWS PER 6 IN. - 140 LB. HAMMER FALLING 30 IN. TO DRIVE A 2.0 IN. OD SPLIT SPOON SAMPLER WOR-WEIGHT OF RODS WOH-WEIGHT OF RODS AND HAMMER PEN-PENETRATION LENGTH OF SAMPLER OR CORE BARREL REC-LENGTH OF RECOVERED SAMPLE RQD-LENGTH OF SOUND CORE SECTIONS > 4 IN./LENGTH CORED, % S-SPLIT SPOON SAMPLE      Sv-TORVANE      Qp-PENETROMETER U-UNDISTURBED SAMPLE      V- GROUND WATER	Notes:          <div style="display: flex; justify-content: space-between; align-items: center;"> <div style="width: 60%;">Broad Street Parkway</div> <div style="width: 35%; text-align: right;">           Φ GEI Consultants, Inc.            Project 98217         </div> </div>
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BORING LOCATION 508+69 R 33					DATE START - FINISH 7/27/98 - 7/30/98		B1905	
GROUND ELEVATION 170.9 DATUM NGVD					DRILLED BY Maine Test Boring		TOTAL DEPTH (Ft.) 108.9	
GROUND WATER EL. 122.7 DATE 8/19/98					LOGGED BY Brian F. Jankauskas		Page 3 of 4	
DEPTH	SAMPLE				SOIL AND ROCK DESCRIPTIONS	FIELD TESTS	STRATUM DESCRIP.	Equipment Installation
FT.	TYPE & NO	BLOWS / 6 IN	PEN R	REC R				
60	S13	10-14 17-18	2	0.4	SAND (SW) Widely graded. Mostly fine to coarse sand, <5% gravel, <5% non-plastic fines, brown.			Filter sand from 46.1' to 74'
65	S14	10-13 25-29	2	1.0	Upper 0.8' SAND (SP) Narrowly graded. Mostly fine sand, <5% non-plastic fines, brown. 66' Lower 0.2' SILT (ML) Low toughness, rapid dilatancy, non-plastic, brown.			
70								
70.7 71.0	S15	100/ 0.3	0.3	0.3	GRAVEL WITH SILT (GW-GM) Widely graded. Mostly angular gravel to 1.5" diameter, ~ 10% non-plastic fines. GLACIAL TILL			
72.9	R1	8 min	5'	0.7'	Boulder from approximately 71' to 74'.			Cuttings from 74.0'-108.9'
75		4 min						
		2 min						
		1 min						
77.9		1 min					GLACIAL TILL	
80	S16	37-39 39- 90/0.4	1.9	1.1	SAND WITH GRAVEL (SP) Narrowly graded. Mostly fine and coarse sand, 25% angular gravel, <5% non-plastic fines, brown.			
85					Possible boulder or cobble at 85.7'			
	S17	100/ 0.2	0.2	0.1	GRAVEL (GP) Narrowly graded. Mostly fine angular gravel and medium to coarse sand, <5% non-plastic fines, gray.			
	R2	4 min						
90		7 min	5.2	2.3	Cobbles and Gravel.			

BLOWS PER 6 IN - 140 LB HAMMER FALLING 30 IN. TO DRIVE A  
 2.0 IN. OD SPLIT SPOON SAMPLER  
 WOH-WEIGHT OF RODS  
 WOH-WEIGHT OF RODS AND HAMMER  
 PEN-PENETRATION LENGTH OF SAMPLER OR CORE BARREL  
 REC-LENGTH OF RECOVERED SAMPLE  
 RQD-LENGTH OF SOUND CORE SECTIONS > 4 IN./LENGTH CORED, %  
 S-SPLIT SPOON SAMPLE Sv-TORVANE Qp-PENETROMETER  
 U-UNDISTURBED SAMPLE V GROUND WATER

Notes:

Broad Street Parkway

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 Project 98217

BORING LOCATION <u>508+69 R 33</u>					DATE START - FINISH <u>7/27/98 - 7/30/98</u>		<b>B1905</b>	
GROUND ELEVATION <u>170.9</u> DATUM <u>NGVD</u>					DRILLED BY <u>Maine Test Boring</u>			
GROUND WATER EL. <u>122.7</u> DATE <u>8/19/98</u>					LOGGED BY <u>Brian F. Jankauskas</u>		TOTAL DEPTH (Ft.) <u>108.9</u>	
Page 4 of 4								

DEPTH FT.	SAMPLE				SOIL AND ROCK DESCRIPTIONS	FIELD TESTS	STRATUM DESCRIP.	Remarks
	TYPE A NO.	BLOWS / 6 IN.	PEN ft.	REC ft.				
90	R2	12 min			Cobbles and Gravel.			
		9 min	5.2	2.3				
		6 min						
95								
					96.5'			
99.0	R3	9 min	3.9	3.9	META SEDIMENTARY. Slightly weathered, fractures dipping at 20, 45, 60 and 90 degrees from the horizontal. Fractures unevenly spaced from 1" to 8" apart. RQD=51%.		BEDROCK	
100		8 min						
		9 min						
102.9		12 min / 0.9'						
105	R4	8 min	2.2	2.2	META SEDIMENTARY. Slightly weathered, fractures dipping at 0, 5, 20, 30, and 90 degrees from the horizontal, spaced from 1" to 4" apart. RQD=15%.			
105.1		24 min						
		14 min / 0.2						
	R5	15 min	3.8	3.8				
		17 min			META SEDIMENTARY. Slightly weathered, fractures dipping at 0, 20, 60 and 90 degrees from the horizontal spaced from 1/2" to 12" apart. RQD=44%.			
		9 min						
		11 min / 0.8'						
108.9					108.9'			
110					Bottom of Boring 108.9'			
115								
120								

BLOWS PER 6 IN. - 140 LB. HAMMER FALLING 30 IN. TO DRIVE A 2.0 IN. OD SPLIT SPOON SAMPLER WOH-WEIGHT OF RODS WOH-WEIGHT OF RODS AND HAMMER PEN-PENETRATION LENGTH OF SAMPLER OR CORE BARREL REC-LENGTH OF RECOVERED SAMPLE RQD-LENGTH OF SOUND CORE SECTIONS > 4 IN./LENGTH CORED, % S-SPLIT SPOON SAMPLE      Sv-TORVANE      Qp-PENETROMETER U-UNDISTURBED SAMPLE <u>  </u> GROUND WATER	Notes:          <div style="display: flex; justify-content: space-between; align-items: center;"> <span>Broad Street Parkway</span> <span>© GEI Consultants, Inc. Project 98217</span> </div>
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BORING LOCATION <u>711+60 W 32</u>				DATE START - FINISH <u>11/12/98-11/12/98</u>				<b>B2001</b>	
GROUND ELEVATION <u>174.6</u> DATUM <u>NGVD</u>				DRILLED BY <u>Maine Test Boring</u>					
GROUND WATER EL. <u>    </u> DATE <u>    </u>				LOGGED BY <u>Brian F. Jankauskas</u>				TOTAL DEPTH (Ft.) <u>22.0</u>	
		Page 1 of 1							

DEPTH FT.	SAMPLE				SOIL AND ROCK DESCRIPTIONS	FIELD TESTS	STRATUM DESCRIP.	Remarks
	TYPE & NO.	BLOWS / 6 IN.	PEN R.	REC R.				
0.4	S1	10-11 9-8	2	1.1	ASPHALT SAND (SP) Narrowly graded. Mostly fine sand, 5% non-plastic fines, 5% fine rounded gravel brown, FILL.	0.2'	ASPHALT FILL	
2.4						2.5'		
5	S2	4-6 7-8	2	1.1	SAND (SP) Narrowly graded. Mostly fine to medium sand, <5% non-plastic fines, brown.			
10	S3	4-6 5-6	2	0.7	Similar to S2		SAND	
15	S4	3-5 6-8	2	0.1	Similar to S2			
20	S5	9-14 14-16	2	0.6	SAND (SP) Narrowly graded. Mostly fine sand, 5% non-plastic fines, brown.			
					Bottom of Boring 22.0'	22.0'		
25								
30								

BLOWS PER 6 IN. - 140 LB. HAMMER FALLING 30 IN. TO DRIVE A 2.0 IN. OD SPLIT SPOON SAMPLER WOR-WEIGHT OF RODS WOH-WEIGHT OF RODS AND HAMMER PEN-PENETRATION LENGTH OF SAMPLER OR CORE BARREL REC-LENGTH OF RECOVERED SAMPLE RQD-LENGTH OF SOUND CORE SECTIONS > 4 IN./LENGTH CORED, % S-SPLIT SPOON SAMPLE      Sv-TORVANE      Qp-PENETROMETER U-UNDISTURBED SAMPLE      V GROUND WATER	Notes: Auger 0' to 5' Case (driven) wash boring 5' to 22'  <div style="text-align: center;">Broad Street Parkway</div>
	GEI Consultants, Inc. Project 98217

BORING LOCATION <u>711+13 W 56</u>				DATE START - FINISH <u>11/12/98-11/12/98</u>				<b>B2002</b>	
GROUND ELEVATION <u>175.4</u> DATUM <u>NGVD</u>				DRILLED BY <u>Maine Test Boring</u>					
GROUND WATER EL. <u>    </u> DATE <u>    </u>				LOGGED BY <u>Brian F. Jankauskas</u>				TOTAL DEPTH (Ft.) <u>27.0</u>	
Page 1 of 1									

DEPTH FT.	SAMPLE				SOIL AND ROCK DESCRIPTIONS	FIELD TESTS	STRATUM DESCRIP.	Remarks
	TYPE & NO.	BLOWS / 6 IN.	PEN R.	REC R.				
					ASPHALT	0.2'	ASPHALT	
0.4	S1	8-9 9-7	2	1.1	Upper 0.5' - SAND WITH GRAVEL (SP) Narrowly graded. Mostly fine sand, 20% sub-rounded gravel, 5% non-plastic fines, brown, FILL.	1.3'	FILL	
2.4					Lower 0.6' - SAND (SP) Narrowly graded. Mostly fine to medium sand, <5% non-plastic fines, brown with dark brown.			
5	S2	5-6 6-8	2	1.4	SAND (SP) Narrowly graded. Mostly fine to medium sand, <5% non-plastic fines, brown.			
10	S3	6-9 9-9	2	0.6	Similar to S2		SAND	
15	S4	3-4 6-7	2	0.6	Similar to S2			
20	S5	4-7 7-8	2	0.4	Similar to S2			
25	S6	6-7 9-12	2	0.2	Similar to S2			
					27.0'			
					Bottom of Boring 27.0'			
30								

BLOWS PER 6 IN. - 140 LB. HAMMER FALLING 30 IN. TO DRIVE A 2.0 IN. OD SPLIT SPOON SAMPLER WOH-WEIGHT OF RODS WOH-WEIGHT OF RODS AND HAMMER PEN-PENETRATION LENGTH OF SAMPLER OR CORE BARREL REC-LENGTH OF RECOVERED SAMPLE RQD-LENGTH OF SOUND CORE SECTIONS > 4 IN./LENGTH CORED, % S-SPLIT SPOON SAMPLE      Sv-TORVANE      Qp-PENETROMETER U-UNDISTURBED SAMPLE <input checked="" type="checkbox"/> GROUND WATER	Notes: Auger 0' to 5' Case (driven) wash boring 5' to 27'
Broad Street Parkway	Φ GEI Consultants, Inc. Project 98217

BORING LOCATION <u>711+13 W 56</u>				DATE START - FINISH <u>11/12/98-11/12/98</u>				<b>B2002</b>	
GROUND ELEVATION <u>175.4</u> DATUM <u>NGVD</u>				DRILLED BY <u>Maine Test Boring</u>					
GROUND WATER EL. _____ DATE _____				LOGGED BY <u>Brian F. Jankauskas</u>				TOTAL DEPTH (Ft.) <u>27.0</u>	
DEPTH FT.		SAMPLE				SOIL AND ROCK DESCRIPTIONS	FIELD TESTS	STRATUM DESCRIP.	Remarks
		TYPE & NO.	BLOWS / 6 IN.	PEN ft.	REC ft.				
0.4		S1	8-9 9-7	2	1.1	ASPHALT 0.2'		ASPHALT	
2.4						Upper 0.5' - SAND WITH GRAVEL (SP) Narrowly graded. Mostly fine sand, 20% sub-rounded gravel, 5% non-plastic fines, brown, FILL. 1.3'		FILL	
5		S2	5-6 6-8	2	1.4	SAND (SP) Narrowly graded. Mostly fine to medium sand, <5% non-plastic fines, brown.			
10		S3	6-9 9-9	2	0.6	Similar to S2		SAND	
15		S4	3-4 6-7	2	0.6	Similar to S2			
20		S5	4-7 7-8	2	0.4	Similar to S2			
25		S6	6-7 9-12	2	0.2	Similar to S2			
27.0'									
						Bottom of Boring 27.0'			
30									

BLOWS PER 6 IN. - 140 LB. HAMMER FALLING 30 IN. TO DRIVE A 2.0 IN. OD SPLIT SPOON SAMPLER WOH-WEIGHT OF RODS WOH-WEIGHT OF RODS AND HAMMER PEN-PENETRATION LENGTH OF SAMPLER OR CORE BARREL REC-LENGTH OF RECOVERED SAMPLE RQD-LENGTH OF SOUND CORE SECTIONS > 4 IN./LENGTH CORED, % S-SPLIT SPOON SAMPLE      Sv-TORVANE      Qp-PENETROMETER U-UNDISTURBED SAMPLE      V GROUND WATER	Notes: Auger 0' to 5' Case (driven) wash boring 5' to 27'
	Broad Street Parkway
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## TEST BORING LOG

PROJECT: Sargent Avenue Extension

NUMBER: 98217

LOCATION: Nashua, NH

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BORING NUMBER

SA-1

BORING LOCATION: STA 207+95 Left 35'

GROUND ELEV. (NGVD): 150.3'

START / FINISH DATE: 07/27/00 - 07/28/00

GW DEPTH / ELEV.:

GWT DATE / TIME:

TOTAL DEPTH: 82.0'

SOIL BORING: 82.0'

ROCK CORE: 0.0'

DRILLED BY: MTB, TS

LOGGED BY: WmP

BLOWS PER 6 IN. - 140 LB. HAMMER FALLING 30 IN. TO DRIVE A 2.0 IN O.D. SPLIT

SPOON SAMPLER

NM - NOT MEASURED

PEN - PENETRATION LENGTH OF SAMPLER OR CORE BARREL

REC - RECOVERY LENGTH OF SAMPLE

RQD - LENGTH OF SOUND CORES &gt; 4 IN. / LENGTH CORED, (%)

S - SPLIT SPOON SAMPLE

A - AUGER SAMPLE

U - UNOISTURBED SAMPLE

UF - UNOISTURBED SAMPLE, FIXED PISTON

UO - UNOISTURBED SAMPLE, OSTERBERG

- MEASURED GWT

- ESTIMATED GWT

NOTES:

ELEV. (ft)	DEPTH (ft)	TYPE and NUMBER	SPT N per 6 in	PEN (in)	REC (in)	REMARKS	GWT	LITH	USCS SOIL AND ROCK DESCRIPTIONS	STRATA CHANGE	WELL
160		S1	5 20 25 50	24	12	Test boring advanced using 4 1/4" HSA. SS refusal.			(S1) (SW) WIDELY GRADED SAND WITH GRAVEL: Fine to coarse sand. Contains ~35% rounded to subrounded gravel to 1 3/8". FILL		
155	-5	S2	75/4"	4	0	SS refusal.  Test boring advanced using 3" FJC.			(S2) NO RECOVERY: Relocated boring 5' to west. (SW) WIDELY GRADED SAND: Fine to coarse sand. Contains trace amounts of rubble (glass, trash, cans, etc.). FILL	-7'	
150	-10	S3	16 22 25 24	24	9				(S3) WIDELY GRADED SAND WITH GRAVEL: Fine to coarse sand with ~5% non-plastic fines. Contains ~ 30% fine subrounded gravel to 1/2".		
145	-15	S4	12 14 17 25	24	9				(S4) 0"-4" (SW) WIDELY GRADED SAND WITH GRAVEL: Fine to coarse sand, brown. Contains ~10% to 15% fine gravel.	-16'	
140	-20	S5	12 16 20 27	24	10				(S4 cont.) (SP) NARROWLY GRADED SAND: fine to medium sand with ~10% coarse sand and <5% non- plastic fines.		
135	-25	S6	14 22 35 42	24	12	Water level 07/29/00 @ 07:00.			(S5) (SW) WIDELY GRADED SAND: Fine to coarse sand with <3% non-plastic fines, brown. Contains occasional fine gravel to 3/8"		
130	-30	S7	24 34 40	18	9				(S6) (SP) NARROWLY GRADED SAND: Fine to medium sand ~5% coarse sand and <3% non-plastic fines, brown.		
									(S7) 0"-3" (SM) SILTY SAND: Fine sand with ~20% non-plastic fines, grayish brown.		
									3"-4" (SP) NARROWLY GRADED SAND: Fine to medium sand with ~3% non-plastic fines.	30.5'	
									4"-9" (ML) SILT: Silt, stratified, gray to brown, with thin lamina of silty fine sand.	-34'	
125	-35	S8	15 50	12	3	SS refusal			(S8) (SW) WIDELY GRADED SAND: Fine to coarse sand, brown. Contains ~10% subrounded gravel to 3/8" and <3% non-plastic fines.		



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## TEST BORING LOG

PROJECT: Sargent Avenue Extension

NUMBER: 98217

LOCATION: Nashua, NH

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OF  
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BORING NUMBER

SA-1

BORING LOCATION: STA 207+95 Left 35'  
 GROUND ELEV. (NGVD): 150.6'  
 START / FINISH DATE: 07/27/00 - 07/28/00  
 GW DEPTH / ELEV.:  
 GWT DATE / TIME:

TOTAL DEPTH: 52.0'  
 SOIL BORING: 52.0'  
 ROCK CORE: 0.0'  
 DRILLED BY: MTB, TS  
 LOGGED BY: Wmp

BLOWS PER 6 IN. - 140 LB HAMMER FALLING 30 IN. TO DRIVE A 2.0 IN O.D. SPLIT SPOON SAMPLER  
 NM - NOT MEASURED  
 PEN - PENETRATION LENGTH OF SAMPLER OR CORE BARREL  
 REC - RECOVERY LENGTH OF SAMPLE  
 ROD - LENGTH OF SOUND CORES > 4 IN. LENGTH CORED. (%)  
 S - SPLIT SPOON SAMPLE  
 A - AUGER SAMPLE  
 U - UNDISTURBED SAMPLE  
 UF - UNDISTURBED SAMPLE, FIXED PISTON  
 UO - UNDISTURBED SAMPLE, OSTERBERG

## NOTES:

ELEV. (ft)	DEPTH (ft)	TYPE and NUMBER	SPT N per 6 in	PEN (ln)	REC (ln)	REMARKS	GWT	LITH	USCS SOIL AND ROCK DESCRIPTIONS	STRATA CHANGE	WELL
120	-40	S9	18 33 33 34	24	10				(S9) (SP) NARROWLY GRADED SAND: Fine to medium sand with ~ 10% coarse sand, < 3% non-plastic fines, and occasional subangular gravel to 3/8", brown.		
115	-45	S10	12 20 30 38	24	11				(S10) (SP) NARROWLY GRADED SAND: Fine sand with < 5% non-plastic fines, brown. (1) 3/8" thick lense of fine to medium sand, brown.		
110	-50	S11	22 26 30 35	24	13				(S11) (SP-SM) NARROWLY GRADED SAND WITH SILT: Fine sand with ~ 10% non-plastic fines, grayish brown. (1) 3" thick layer of widely graded sand with occasional fine gravel, grayish brown.	-53'	
105	-55	S12	13 27 50/4"	16	8	SS refusal.			(S12) (ML) SILT WITH SAND: Silt, non-plastic with ~ 5% to 10% fine sand and 5% angular gravel to 1/2", grayish brown.	56'	
100	-60	S13	20 24 27 20	24	10	B.O.B.			(S13) (SM) SILTY SAND WITH GRAVEL: Sand and silt with ~ 35% to 45% angular gravel to 1 1/4", up to ~ 20% fines, mottled, grayish to orangish brown. TILL		
									Boring terminated at 62.0'		





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## TEST BORING LOG

PROJECT: Sargent Avenue Extension

NUMBER: 98217

LOCATION: Nashua, NH

PAGE

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OF

2

BORING NUMBER

SA-2

BORING LOCATION: STA 208+15 Right 40'  
 GROUND ELEV. (NGVD): 155.3'  
 START / FINISH DATE: 3/7/00 - (11:00 - 17:40)  
 GW DEPTH / ELEV.:  
 GWT DATE / TIME:

TOTAL DEPTH: 59.0'  
 SOIL BORING: 58.5'  
 ROCK CORE: 2.5'  
 DRILLED BY: MTB, TS  
 LOGGED BY: ALS

BLOWS PER 6 IN. - 140 LB. HAMMER FALLING 30 IN. TO DRIVE A 2.0 IN O.D. SPLIT  
 SPOON SAMPLER  
 NM - NOT MEASURED  
 PEN - PENETRATION LENGTH OF SAMPLER OR CORE BARREL  
 REC - RECOVERY LENGTH OF SAMPLE  
 RCD - LENGTH OF SOUND CORES > 4 IN. / LENGTH CORED. (%)

## NOTES:


S - SPLIT SPOON SAMPLE  
 A - AUGER SAMPLE  
 U - UNOISTURBED SAMPLE  
 UF - UNOISTURBED SAMPLE, FIXED PISTON  
 UO - UNOISTURBED SAMPLE, OSTERBERG

MEASURED GWT  
 ESTIMATED GWT

ELEV. (ft)	DEPTH (ft)	TYPE and NUMBER	SPT N per 6 in	PEN (in)	REC (in)	REMARKS	GWT	LITH.	USCS SOIL AND ROCK DESCRIPTIONS	STRATA CHANGE	WELL
155		S1	1 WOH 1	24	12	Test boring advanced using 4 1/4" SSA.			(S1) 0"-6" Topsoil. 6"-12" (SP) NARROWLY GRADED SAND: Fine sand with ~ 5% coarse sand, orange. Contains roots throughout. FILL		
150	-5	S2	6 22 22 23	24	17				(S2) Alternating (SP) NARROWLY GRADED SAND and (SW) WIDELY GRADED SAND WITH GRAVEL: Medium sand containing <5% non-plastic fines, light brown and fine to coarse sand containing angular gravel to 1", light gray. FILL	6.5'	
145	-10	S3	15 15 18 30	24	10	Test boring advanced using 3" FJC.			(S2 cont.) (SP) NARROWLY GRADED SAND: Fine to medium sand, stratified, alternating lamina of light brown and orange.		
140	-15	S4	7 15 40 65	24	9	Cobbles and gravel throughout.			(S3) (SW) WIDELY GRADED SAND: Fine to medium sand, stratified, light brown to light gray.	-12'	
135	-20	S5	22 32 36 40	24	10				(S4) (SW) WIDELY GRADED SAND WITH GRAVEL: Medium to coarse sand with < 3% non-plastic fines, stratified, brown to reddish orange. Contains ~ 15% subrounded gravel to 3/4".		
130	-25	S6	34 29 42 28	24	12				(S5) (SP) NARROWLY GRADED SAND WITH GRAVEL: Medium sand with < 5% non-plastic fines, stratified, light brown to reddish orange. Contains ~ 15% subrounded gravel to 1".		
125	-30	S7	10 17 17 19	24	13	Water level 07/31/00 @ 17.53.			(S6) (SP) Similar to S5.	-28'	
120	-35	S8	9 12 14 16	24	0				(S7) 3"-10" (SP) NARROWLY GRADED SAND: Fine to medium sand, stratified, brown. Contains ~ 5% subrounded dark gray and white gravel to 1/2"		
									10"-13" (SP-SM) NARROWLY GRADED SAND WITH SILT: Fine to medium sand with ~ 10% fines, stratified, brown		
									(S8) NO RECOVERY		

 <b>GEI Consultants, Inc.</b>	<b>TEST BORING LOG</b>		<b>PROJECT:</b> Sargent Avenue Extension <b>NUMBER:</b> 98217 <b>LOCATION:</b> Nashua, NH	<b>PAGE</b> 2 <b>OF</b> 2	<b>BORING NUMBER</b>  <b>SA-2</b>	
	<b>BORING LOCATION:</b> STA 208+15 Right 40' <b>GROUND ELEV. (NGVD):</b> 55.3' <b>START / FINISH DATE:</b> 3/7/00 - (11:00 - 17:40) <b>GW DEPTH / ELEV.:</b> <b>GWT DATE / TIME:</b>		<b>TOTAL DEPTH:</b> 59.0' <b>SOIL BORING:</b> 56.5' <b>ROCK CORE:</b> 2.5' <b>DRILLED BY:</b> MTB, TS <b>LOGGED BY:</b> ALS		<b>BLOWS PER 6 IN. - 140 LB. HAMMER FALLING 30 IN. TO DRIVE A 2.0 IN O.D. SPLIT SPOON SAMPLER</b> NM - NOT MEASURED PEN - PENETRATION LENGTH OF SAMPLER OR CORE BARREL REC - RECOVERY LENGTH OF SAMPLE RQD - LENGTH OF SOUND CORES > 4 IN. / LENGTH CORED. (%) S - SPLIT SPOON SAMPLE A - AUGER SAMPLE U - UNDISTURBED SAMPLE UF - UNDISTURBED SAMPLE, FIXED PISTON UO - UNDISTURBED SAMPLE, OSTERBERG	
	<b>NOTES:</b>		- MEASURED GWT - ESTIMATED GWT			

ELEV. (ft)	DEPTH (ft)	TYPE and NUMBER	SPT N per 6 in	PEN (in)	REC (in)	REMARKS	GWT	LITH.	USCS SOIL AND ROCK DESCRIPTIONS	STRATA CHANGE	WELL
115	-40	S9	8 14 15 18	24	2				(S9) (SP) NARROWLY GRADED SAND: Coarse sand with < 3% nonplastic fines, light brown, gray, dark gray, and white.		
110	-45	S10	7 12 17 20	24	4				(S10) (SP) NARROWLY GRADED SAND: Coarse sand with < 5% non-plastic fines, stratified, light brown.		
105	-50	S11	8 12 16 16	24	10				(S11) (SP) NARROWLY GRADED SAND: Fine sand with < 5% non-plastic fines, stratified, light brown.		
									(S12) 0"-3" (SP) NARROWLY GRADED SAND: Fine sand, stratified, light brown.		
									3"-7" (SP-SM) NARROWLY GRADED SAND: Fine sand, stratified, brown.		
100	-55	S12	25/2"	8	8	SS bouncing.			7"-3" (ML) SILT. Silt, stratified, light brown.	55'	
		R1		30	0	NQ core aniling.					
						B.O.B.			(R1) BOULDER: NO RECOVERY		
95	-60								Boring terminated at 59.0'		

 <b>GEI Consultants, Inc.</b>	<b>TEST BORING LOG</b>	<b>PROJECT:</b> Sargent Avenue Extension <b>NUMBER:</b> 98217 <b>LOCATION:</b> Nashua, NH	<b>PAGE</b> 1 <b>OF</b> 2	<b>BORING NUMBER</b> <b>SA-3</b>
		<b>BORING LOCATION:</b> STA 209+10 Left 20' <b>GROUND ELEV. (NGVD):</b> 155.5' <b>START / FINISH DATE:</b> 07/25/00 - 07/27/00 <b>GW DEPTH / ELEV.:</b> <b>GWT DATE / TIME:</b>		
<b>TOTAL DEPTH:</b> 52.0' <b>SOIL BORING:</b> 52.0' <b>ROCK CORE:</b> 0.0' <b>DRILLED BY:</b> MTB, TS <b>LOGGED BY:</b> ALS, WMP		<b>BLOWS PER 5 IN. - 140 LB. HAMMER FALLING 30 IN. TO DRIVE A 2.0 IN O.D. SPLIT SPOON SAMPLER</b> <b>NM - NOT MEASURED</b> <b>PEN - PENETRATION LENGTH OF SAMPLER OR CORE BARREL</b> <b>REC - RECOVERY LENGTH OF SAMPLE</b> <b>RCD - LENGTH OF SOUND CORES &gt; 4 IN. / LENGTH CORED, (%)</b> <b>S - SPLIT SPOON SAMPLE</b> <b>A - AUGER SAMPLE</b> <b>U - UNDISTURBED SAMPLE</b> <b>UF - UNDISTURBED SAMPLE, FIXED PISTON</b> <b>UO - UNOISTURBED SAMPLE, OSTERBERG</b>		
<b>NOTES:</b> Observation well installed 07/27/00. Well cover elevation 158.5'. Masterrock key #2395.		<b>- MEASURED GWT</b> <b>- ESTIMATED GWT</b>		

ELEV. (ft)	DEPTH (ft)	TYPE and NUMBER	SPT N per 6 in	PEN (In)	REC (In)	REMARKS	GWT LITH.	USCS SOIL AND ROCK DESCRIPTIONS	STRATA CHANGE	WELL
155		S1	1 1 2 3	24	15	Test boring advanced using 4 1/4" SSA.		(S1) 0-10" Topsoil. 10"-15" (SP) NARROWLY GRADED SAND: Fine sand, reddish brown. Contains roots.		Bent. seal Coarse sand
150	-5	S2	5 7 8 10	24	24	Test boring advanced using 3" FJC.		(S2) 0"-2" (SP) Similar to bottom 5" of S1. (S2 cont.) 2"-24" (SP) NARROWLY GRADED SAND: Fine to medium sand with <5% non-plastic fines, light brown.	5'	Bent. seal Coarse sand
145	-10	S3	10 18 14 16	24	9			(S3) (SP) Similar to bottom 5" of S2 except light gray.		Coarse sand
140	-15	S4	23 29 28 32	24	12	Drill head bouncing.		(S4) (SP-SM) WIDELY GRADED SAND WITH SILT AND GRAVEL: Fine to medium sand with ~ 10% silt and ~ 5% coarse sand, light brown to brown. Contains ~ 15% subrounded dark gray gravel to 1".	14'	2" nom. dia. sched. #40 PVC liner
135	-20	S5	15 19 19 32	24	12	Cobbles and gravel throughout.		(S5) (SP) NARROWLY GRADED SAND WITH GRAVEL. Medium to coarse sand with < 5% non-plastic fines, light brown. Contains ~ 15% rounded dark gray and white gravel to 3/4".		Bent. top seal
130	-25	S6	18 16 16 20	24	13			(S6) (SW) WIDELY GRADED SAND WITH GRAVEL. Fine to coarse sand with < 5% non-plastic fines. Contains ~ 15% subangular dark gray and white gravel to 1/2".		Coarse sand
125	-30	S7	6 10 13 17	24	10	Ground water level on 08/30/00.		(S7) DISTURBED SAMPLE (SP) NARROWLY GRADED SAND: Medium sand with < 5% non-plastic fines, light brown. Contains angular gravel to 1/2".	-29'	2" nom. dia. sched. #40 PVC 1/32" slotted well screen
120	-35	S8	6 11 10 13	24	8			(S8) (SP) NARROWLY GRADED SAND: Fine sand, stratified, light brown.		Silt trap



GEI Consultants, Inc.

## TEST BORING LOG

PROJECT: Sargent Avenue Extension  
NUMBER: 98217  
LOCATION: Nashua, NH

PAGE  
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OF  
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BORING NUMBER  
**SA-3**

BORING LOCATION: STA 209+10 Left 20'  
GROUND ELEV. (NGVD): 155.5'  
START / FINISH DATE: 07/25/00 - 07/27/00  
GW DEPTH / ELEV.:  
GWT DATE / TIME:

TOTAL DEPTH: 52.0'  
SOIL BORING: 52.0'  
ROCK CORE: 0.0'  
DRILLED BY: MTB, TS  
LOGGED BY: ALS, Wmp

BLOWS PER 6 IN. - 140 LB. HAMMER FALLING 30 IN. TO DRIVE A 2.0 IN O.D. SPLIT  
SPOON SAMPLER  
NM - NOT MEASURED  
PEN - PENETRATION LENGTH OF SAMPLER OR CORE BARREL  
REC - RECOVERY LENGTH OF SAMPLE  
RQD - LENGTH OF SOUND CORES > 4 IN. / LENGTH CORED, (%)

NOTES: Observation well installed 07/27/00.  
Well cover elevation - 58.5'  
Masterlock key #2396.

S - SPLIT SPOON SAMPLE  
A - AUGER SAMPLE  
U - UNDISTURBED SAMPLE  
UF - UNOISTURBED SAMPLE, FIXED PISTON  
UO - UNOISTURBED SAMPLE, OSTERBERG  
MEASURED GWT  
ESTIMATED GWT

ELEV. (ft)	DEPTH (ft)	TYPE and NUMBER	SPT N per 6 in	PEN (in)	REC (in)	REMARKS	GWT LITH.	USCS SOIL AND ROCK DESCRIPTIONS	STRATA CHANGE	WELL
115	-40	S9	7 7 6 10	24	8			(S9) (SP) NARROWLY GRADED SAND: Medium sand with ~ 10% coarse sand and < 5% non-plastic fines, brown. Contains ~ 5% subrounded gravel to 3/8".		Bent. seal
110	-45	S10	5 9 10 16	24	6			(S10) (SP) Similar to S9.		Drill cuttings
105	-50	S11	7 11 12 18	24	10			(S11) (SW) WIDELY GRADED SAND: Fine to coarse sand with < 5% non-plastic fines, brown. Contains subrounded gravel to 3/8".		
									-53'	
100	-55	R1		24	5			(R1) BOULDER: Fine to medium grained, hard, heavily weathered, light gray granite. RQD = NM.		Bent. seal
95	-60	R2		36	22			(R2) BEDROCK: Medium grained, moderately jointed throughout, several steep irregular 50 degree and vertical joints, moderately weathered, RQD=0%. GRANITE	59'	
						B.O.B.		Boring terminated at 52.0'		

BORING LOCATION: STA 210+35 Right 35'  
 GROUND ELEV. (NGVD): 151.5'  
 START / FINISH DATE: 07/25/00 (08:30-13:30)  
 GW DEPTH / ELEV.:  
 GWT DATE / TIME:

TOTAL DEPTH: 31.58'  
SOIL BORING: 31.58'  
ROCK CORE: 0.0'  
DRILLED BY: MTB, TS  
LOGGED BY: ALS

BLOWS PER 6 IN. - 140 LB. HAMMER FALLING 30 IN. TO DRIVE A 2.0 IN O.D. SPLIT  
SPOON SAMPLER  
NM - NOT MEASURED  
PEN - PENETRATION LENGTH OF SAMPLER OR CORE BARREL  
REC - RECOVERY LENGTH OF SAMPLE  
ROD - LENGTH OF SOUND CORES > 4 IN. / LENGTH CORED. (%)

S - SPLIT SPOON SAMPLE	Σ	- MEASURED GWT
A - AUGER SAMPLE		
U - UNDISTURBED SAMPLE		
UF - UNOISTURBED SAMPLE, FIXED PISTON	Σ	- ESTIMATED GWT
UO - UNDISTURBED SAMPLE, OSTERBERG		

**NOTES:**

ELEV. (ft)	DEPTH (ft)	TYPE and NUMBER	SPT N per 6 in	PEN (ln)	REC (ln)	REMARKS	GWT	LITH.	USCS SOIL AND ROCK DESCRIPTIONS	STRATA CHANGE	WELL
160	0	S1	1 3 3 4	24	24	Test boring advanced using 4 1/4" SSA.			(S1) 0"-10" Topsoil. (SP) NARROWLY GRADED SAND: Fine sand with < 5% non-plastic fines, brown, and medium sand with ~ 10% - 15% fine sand with < 5% non-plastic fines, light brown, occasional roots within. FILL	-4'	
155	-3	S2	5 7 9 12	24	19	Test boring advanced using 3" FJC.			(S2) (SP) NARROWLY GRADED SAND: Medium sand with ~ 5% fine sand and < 5% non-plastic fines, stratified, light brown.		
150	-10	S3	4 7 10 13	24	11				(S3) (SP) Similar to S2.		
145	-15	S4	11 14 16 20	24	11				(S4) (SP) Similar to S2 except mostly fine sand.		
140	-20	S5	10 16 17 24	24	12				(S5) 0"-7" (SP) Similar to S4. 7"-12" (ML) SILT: Stratified, light brown to light gray silt.		
135	-25	S6	18 25 36 50/5"	23	11				(S6) (SM) SILTY SAND: Stratified, light brown to light gray.		
130	-30	S7	12 17 23 32	24	14	Water level on 07/25/00 @ 1:20.			(S7) 0"-5" (SM) Similar to S6. 5"-11" (SP) NARROWLY GRADED SAND: Fine sand, stratified, light brown. 11"-15" (SM) Similar to S6.	-34'	
125	-35	S8	12 14 21 34	24	19	Drill head bouncing.			(S8) (ML) SILT: Stratified, reddish to light brown silt.	-38'	

BORING LOCATION: STA 210+35 Right 35'  
GROUND ELEV. (NGVD): 161.5'  
START / FINISH DATE: 07/25/00 (06.30-13.30)  
GW DEPTH / ELEV.:  
GWT DATE / TIME:

TOTAL DEPTH: 61.56'  
SOIL BORING: 61.56'  
ROCK CORE: 0.0'  
DRILLED BY: MTB, TS  
LOGGED BY: ALS

BLOWS PER 6 IN. - 140 LB. HAMMER FALLING 30 IN. TO DRIVE A 2.0 IN O.D. SPLIT  
SPOON SAMPLER  
NM - NOT MEASURED  
PEN - PENETRATION LENGTH OF SAMPLER OR CORE BARREL  
REC - RECOVERY LENGTH OF SAMPLE  
RCD - LENGTH OF SOUND CORES > 4 IN. / LENGTH CORED. (%)  
S - SPLIT SPOON SAMPLE  
A - AUGER SAMPLE                                 = - MEASURED GWT  
U - UNDISTURBED SAMPLE  
UF - UNDISTURBED SAMPLE, FIXED PISTON  
UO - UNDISTURBED SAMPLE, OSTERBERG                                 = - ESTIMATED GWT

**NOTES:**

ELEV. (ft)	DEPTH (ft)	TYPE and NUMBER	SPT N per 6 in	PEN (in)	REC (in)	REMARKS	GWT	LITH	USCS SOIL AND ROCK DESCRIPTIONS	STRATA CHANGE	WELL
120	-40	S9	6 9 14 28	24	24	Pock. penet. (3 readings)=1.25 tsf			(S9) (CL) LEAN CLAY: Stratified, light to dark gray. Contains an occasional lense of fine sand, reddish brown. Tip of spoon (ML) SILT: Stratified, gray.	-42'	
115	-45	S10	25 27 23 35	24	12				(S10) (SW): WIDELY GRADED SAND WITH SILT AND GRAVEL. Fine to coarse sand with ~10% silt, light brown. Contains ~15% to 25% angular gravel to 1 1/4", dark gray.		
110	-50	S11	22 23 20 21	24	11				(S11) (SM) Similar to S10.	-53'	
105	-55	S12	13 11 12 8	24	4				(S12) (SP) NARROWLY GRADED SAND: Medium to coarse sand with < 5% non-plastic fines, brown. Contains ~10% angular and subrounded gravel to 1", dark gray.		
100	-60	S13	10 17 30 30/1"	19	6	SS refusal. B.O.B.			(S13) (SM) Similar to S12.  Logging terminated at 61.58'		

BORING LOCATION: STA 210+10  
GROUND ELEV. (NGVD): 58.5'  
START / FINISH DATE: 07/20-21/00 (14:50-09:30)  
GW DEPTH / ELEV.:  
GWT DATE / TIME:

TOTAL DEPTH: 52.0'  
SOIL BORING: 52.0'  
ROCK CORE: 0.0'  
DRILLED BY: MTB, TS  
LOGGED BY: ALS

BLOWS PER 6 IN. - 140 LB. HAMMER FALLING 30 IN. TO DRIVE A 2.0 IN O.D. SPLIT  
SPOON SAMPLER

NM - NOT MEASURED

PEN - PENETRATION LENGTH OF SAMPLER OR CORE BARREL

REC - RECOVERY LENGTH OF SAMPLE

RQD - LENGTH OF SOUND CORES > 4 IN. / LENGTH CORED. (%)

S - SPLIT SPOON SAMPLE      ▾ - MEASURED GWT

A - AUGER SAMPLE

U - UNDISTURBED SAMPLE

UF - UNDISTURBED SAMPLE, FIXED PISTON      = - ESTIMATED GWT



UO - UNDISTURBED SAMPLE, ØSTERBERG

**NOTES:**

ELEV. (ft)	DEPTH (ft)	TYPE and NUMBER	SPT N per 6 in.	PEN (in)	REC (in)	REMARKS	GWT	LITH	USCS SOIL AND ROCK DESCRIPTIONS	STRATA CHANGE	WELL
		S1	12 5 4 5	24	12	Test boring advanced using 4 1/4" SSA.			(S1) 0"-6" Topsoil. 6"-12" (SP) NARROWLY GRADED SAND: Fine sand with ~ 10% coarse sand, light brown. FILL		
-5		S2	4 5 9 12	24	16	Test boring advanced using 3" FJC.			(S2) 0"-8" (SP) Similar to bottom 6" of S1 except brown. FILL 8"-16" (SP) NARROWLY GRADED SAND: Fine sand with < 5% non-plastic fines, stratified, light brown.	-3'	
-10		S3	13 22 27 28	24	11				(S3) (SP) NARROWLY GRADED SAND: Fine sand, stratified, alternating laminae of light brown, light orange, and reddish brown.		
-15		S4	11 18 22 28	24	12				(S4) (SP) Similar to S3. Occasional lense of silt.		
-20		S5	22 29 29 38	24	12	Water level 07/21/00 @ 06:30.			(S5) (SP) Similar to S3.		
-25		S6	13 15 25 25	24	13				(S6) (SP) Similar to S4.		
-30		S7	15 12 28 25	24	12				(S7) 0"-4" (SP) Similar to S3. 4"-12" (MLCL) SILT / CLAY: Alternating lamina of silt, reddish orange and silty clay, dark gray.	-30.5" -32.5"	
-35		S8	24 28 38	18	12	Drill head bouncing.			(S8) (SP) NARROWLY GRADED SAND WITH GRAVEL: Fine to medium sand, light to reddish brown. Contains ~15% angular gravel to 1 1/4". Contains (1) 2" thick layer of stratified fine sand.		

BORING LOCATION: STA 210+10  
GROUND ELEV. (NGVD): 59.5'  
START / FINISH DATE: 07/20-21/00 (14:50-09:30)  
GW DEPTH / ELEV.:  
GWT DATE / TIME:

TOTAL DEPTH: 62.0'  
SOIL BORING: 62.0'  
ROCK CORE: 0.0'  
DRILLED BY: MTB, TS  
LOGGED BY: ALS

BLOWS PER 6 IN. - 140 LB. HAMMER FALLING 30 IN. TO DRIVE A 2.0 IN O.D. SPLIT  
SPOON SAMPLER  
NM - NOT MEASURED  
PEN - PENETRATION LENGTH OF SAMPLER OR CORE BARREL  
REC - RECOVERY LENGTH OF SAMPLE  
RQD - LENGTH OF SOUND CORES > 4 IN. / LENGTH CORED. (%)  
S - SPLIT SPOON SAMPLE  
A - AUGER SAMPLE  - MEASURED GWT  
U - UNDISTURBED SAMPLE  
UF - UNOISTURBED SAMPLE, FIXED PISTON  
UO - UNDISTURBED SAMPLE, OSTERBERG  - ESTIMATED GWT

**NOTES:**

ELEV. (ft)	DEPTH (ft)	TYPE and NUMBER	SPT N per 6 in	PEN (ln)	REC (ln)	REMARKS	GWT	LITH.	USCS SOIL AND ROCK DESCRIPTIONS	STRATA CHANGE	WELL
-40		S9	23 27 18 16	24	12				(S9) (SP) Similar to S8.		
-45		S10	14 13 19 22	24	3				(S10) (SP) NARROWLY GRADED SAND: Fine to medium sand with <5% non-plastic fines. Contains -10% subrounded gravel to 1/2".		
-50		S11	11 7 16 10	24	6	5" cobble.			(S11) (SP) Similar to S10.		
-55		S12	6 13 17 12	24	10				(S12) (SP) Similar to S10 except gravel to 1 1/4".		
-60		S13	20 14 12 26	24	6				(S13) (SP) Similar to S10 except gravel to 1".		
-62.0						Boring terminated at 62.0'.					



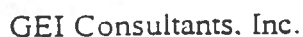
BORING LOCATION: STA 210+45 Left 30'  
GROUND ELEV. (NGVD): 154.8'  
START / FINISH DATE: 07/20/00 (07:00-13:30)  
GW DEPTH / ELEV.:  
GWT DATE / TIME:

TOTAL DEPTH: 62.0'  
SOIL BORING: 62.0'  
ROCK CORE: 0.0'  
DRILLED BY: MTB, TS  
LOGGED BY: ALS

BLOWS PER 6 IN. - 140 LB. HAMMER FALLING 30 IN. TO DRIVE A 2.0 IN O.D. SPLIT  
SPOON SAMPLER  
NM - NOT MEASURED  
PEN - PENETRATION LENGTH OF SAMPLER OR CORE BARREL  
REC - RECOVERY LENGTH OF SAMPLE  
RCD - LENGTH OF SOUND CORES > 4 IN. / LENGTH CORED. (%)  
S - SPLIT SPOON SAMPLER  
A - AUGER SAMPLE  $\Sigma$  - MEASURED GWT  
U - UNDISTURBED SAMPLE  
UF - UNDISTURBED SAMPLE, FIXED PISTON  $\approx$  - ESTIMATED GWT  
UO - UNDISTURBED SAMPLE, OSTERBERG

**NOTES:**

ELEV. (ft)	DEPTH (ft)	TYPE and NUMBER	SPT N per 6 in	PEN (in)	REC (in)	REMARKS	GWT	LITH.	USCS SOIL AND ROCK DESCRIPTIONS	STRATA CHANGE	WELL
	0	S1	1 2 2	24	17	Test boring advanced using 4 1/4" SSA.			(S1) 0"-10" Topsoil. 10"-17" (SP) NARROWLY GRADED SAND: Fine sand with ~ 5% coarse sand, light brown. Contains roots.		
150	-5	S2	3 7 8 10	24	17	Test boring advanced using 3" FJC.			(S2) (SP) NARROWLY GRADED SAND: Fine to medium sand, stratified, sand with < 5% non-plastic fines, light brown with occasional reddish orange specks.	-5.5'	
145	-10	S3	8 12 12 16	24	15				(S3) 0"-4" (SP-SM) NARROWLY GRADED SAND WITH SILT: Fine sand with ~10% non-plastic fines, light brown to light gray. 4"-15" (SP) NARROWLY GRADED SAND: Fine sand, stratified, light gray with occasional laminae of reddish brown.		
140	-15	S4	16 20 23 26	24	13				(S4) (SP) 0"-9" Similar to lower 11" of S3. (S4 cont.) 9"-13" (ML) SILT: Silt, stratified, light gray with occasional reddish brown laminae.		
135	-20	S5	15 22 27 27	24	13				(S5) (SM) SILTY SAND: Fine sand with ~20% and silt, stratified, light gray to light brown with occasional laminae of reddish brown fine sand.		
130	-25	S6	12 18 13 17	24	17				(S6) 0"-6" (ML) SILT: Silt, stratified, alternating laminae of light gray and reddish brown. 6"-10" (SP-SM) Similar to S5. 10"-17" (MLCL) SILT / CLAY: Silt, brown, and lean clay, varved, gray.	-25' -27.5'	
125	-30	S7	16 35 39 25	24	13	Drill head bouncing.  Water level on 07/20/00 @ 13:37			(S7) (SW) WIDELY GRADED SAND WITH GRAVEL: Fine to coarse sand, light gray to dark gray. Contains ~25% subangular gravel to 1 1/2", dark gray.		
120	-35	S8	10 23 10 16	24	12				(S8) (SW) Similar to S7.	-38'	





**PROJECT:** Sargent Avenue Extension  
**NUMBER:** 98217  
**LOCATION:** Nashua, NH

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BORING NUMBER  
SA-6

BORING LOCATION: STA 210+45 Left 30'  
GROUND ELEV. (NGVD): 154.8'  
START / FINISH DATE: 07/20/00 (07 00-13:30)  
GW DEPTH / ELEV.:  
GWT DATE / TIME:

TOTAL DEPTH: 62.0'  
SOIL BORING: 62.0'  
ROCK CORE: 0.0'  
DRILLED BY: MTB, TS  
LOGGED BY: ALS

BLOWS PER 6 IN. - 140 LB. HAMMER FALLING 30 IN. TO DRIVE A 2.0 IN O.D. SPLIT  
 SPOON SAMPLER  
 NM - NOT MEASURED  
 PEN - PENETRATION LENGTH OF SAMPLER OR CORE BARREL  
 REC - RECOVERY LENGTH OF SAMPLE  
 RQD - LENGTH OF SOUND CORES > 4 IN. / LENGTH CORED. (%)  
 S - SPLIT SPOON SAMPLE  
 A - AUGER SAMPLE  - MEASURED GWT  
 U - UNDISTURBED SAMPLE  
 UF - UNDISTURBED SAMPLE, FIXED PISTON  
 UO - UNDISTURBED SAMPLE, OSTERBERG  - ESTIMATED GWT

**NOTES:**

ELEV. (ft)	DEPTH (ft)	TYPE and NUMBER	SPT N per 6 in	PEN (ln)	REC (ln)	REMARKS	GWT	LITH.	USCS SOIL AND ROCK DESCRIPTIONS	STRATA CHANGE	WELL
115	-40	S9	13 19 12 8	24	6				(S9) (SP) NARROWLY GRADED SAND: Medium to coarse sand with <3% non-plastic fines, brown. Contains - 10% subrounded gravel to 1".		
110	-45	S10	25 18 15 18	24	12				(S10) (SP) Similar to S9.		
										-49'	
105	-50	S11	8 8 20 32	24	14	Rock in SS @ 5"			(S11) (SP-SM) NARROWLY GRADED SAND WITH SILT AND GRAVEL. Fine sand with ~25% coarse sand and ~10% silt, light gray. Contains ~10% to 15% subrounded gravel to 1/2", dark gray.		
100	-55	S12	28 28 30	18	12				(S12) (SP-SM) Similar to S11.		
95	-60	S13	28 11 23 23	24	12				(S13) (SP-SM) Similar to S11.		
						B.O.B.			Boring terminated at 62.0'		

BORING LOCATION: STA 211+45 Left 45'  
GROUND ELEV. (NGVD): +47.0'  
START / FINISH DATE: 07/25/00 (13:30 - 16:00)  
GW DEPTH / ELEV.:  
GWT DATE / TIME:

TOTAL DEPTH: 42.0'  
SOIL BORING: 42.0'  
ROCK CORE: 0.0'  
DRILLED BY: MTB, TS  
LOGGED BY: ALS

BLOWS PER 6 IN. - 140 LB. HAMMER FALLING 30 IN. TO DRIVE A 2.0 IN O.D. SPLIT  
SPOON SAMPLER

NM - NOT MEASURED

PEN - PENETRATION LENGTH OF SAMPLER OR CORE BARREL

REC - RECOVERY LENGTH OF SAMPLE

RCD - LENGTH OF SOUND CORES > 4 IN.. LENGTH CORED. (%)

S - SPLIT SPOON SAMPLE

A - AUGER SAMPLE                                X - MEASURED GWT

U - UNDISTURBED SAMPLE

UF - UNDISTURBED SAMPLE, FIXED PISTON                                X - ESTIMATED GWT

UO - UNDISTURBED SAMPLE, OSTERBERG

**NOTES:**

ELEV. (ft)	DEPTH (ft)	TYPE and NUMBER	SPT N per 6 in	PEN (ln)	REC (ln)	REMARKS	GWT	LITH.	USCS SOIL AND ROCK DESCRIPTIONS	STRATA CHANGE	WELL
145		S1	1 2 4	24	16	Test boring advanced using 4 1/4" SSA.			(S1) 0"-6" Topsoil. 6"-16" (SP) NARROWLY GRADED SAND: Fine to medium sand, brown to reddish brown. Contains roots. FILL		
140	-5	S2	3 3 4 5	24	22	Test boring advanced using 3" FJC.			(S2) 0"-2" (SP) Similar to bottom 10" of S1. FILL 2"-22" (SP) NARROWLY GRADED SAND: Fine sand, stratified, light brown.	-3'	
135	-10	S3	8 10 12 14	24	11				(S3) (SP) Similar to lower 20" of S2.		
130	-15	S4	11 16 22 25	24	14				(S4) (SP-SM) NARROWLY GRADED SAND WITH SILT: Fine sand with ~ 10% silt, stratified, light brown. (ML) SILT: In tip of spoon.		
125	-20	S5	13 17 22 22	24	13	Water level on 07/25/00 @ 16:45.			(S5) (SP/ML) NARROWLY GRADED SAND / SILT: Fine sand, light brown with alternating laminae of silt, light gray.		
120	-25	S6	8 10 22 38	24	13				(S6) (SP) NARROWLY GRADED SAND: Medium sand with < 5% non-plastic fines, light brown.		
115	-30	S7	15 13 23 17	24	12				(S7) 0"-1" (SP) NARROWLY GRADED SAND: Fine sand, stratified, orange sand with (1) 1/4" lamina of fine sand, black to dark brown.	-30'	
110	-35	S8	18 13 15 15	24	10				1"-12" (SP) NARROWLY GRADED SAND WITH GRAVEL: Medium to coarse sand with ~ 5% fine sand, light brown. Contains ~ 15% subrounded gravel to 1", dark gray. (S8) (SP) Similar to lower 11" of S7.		

BORING LOCATION: STA 211+45 Left 45'  
GROUND ELEV. (NGVD): 147.0'  
START / FINISH DATE: 07/25/00 (13:30 - 16:00)  
GW DEPTH / ELEV.:  
GWT DATE / TIME:

TOTAL DEPTH: 42.0'  
SOIL BORING: 42.0'  
ROCK CORE: 0.0'  
DRILLED BY: MTB. TS  
LOGGED BY: ALS

BLOWS PER 6 IN. - 140 LB. HAMMER FALLING 30 IN. TO DRIVE A 2.0 IN O.D. SPLIT SPOON SAMPLER

NM - NOT MEASURED  
PEN - PENETRATION LENGTH OF SAMPLER OR CORE BARREL  
REC - RECOVERY LENGTH OF SAMPLE  
ROD - LENGTH OF SOUND CORES > 4 IN. / LENGTH CORED. (%)

S - SPLIT SPOON SAMPLE	Σ	- MEASURED GWT
A - AUGER SAMPLE		
U - UNOISTURBED SAMPLE		
UF - UNDISTURBED SAMPLE, FIXED PISTON	Σ	- ESTIMATED GWT
UO - UNDISTURBED SAMPLE, OSTERBERG		

**NOTES:**

ELEV. (ft)	DEPTH (ft)	TYPE and NUMBER	SPT N per 6 in	PEN (in)	REC (in)	REMARKS	GWT	USCS SOIL AND ROCK DESCRIPTIONS	STRATA CHANGE	WELL
-40		S9	27	24	12			(S9) (SP) Similar to lower 11" of S7.		
-45			33							
-50			19							
-55			16							
-60										
-65										
-70										
-75										
-80										
-85										
-90										
-95										
-100										
-105										
-110										
-115										
-120										
-125										
-130										
-135										
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-215										
-220										
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-245										
-250										
-255										
-260										
-265										
-270										
-275										
-280										
-285										
-290										
-295										
-300										
-305										
-310										
-315										
-320										
-325										
-330										
-335										

BORING LOCATION: STA 212+25 Right 30'  
GROUND ELEV. (NGVD): '55.1'  
START / FINISH DATE: 3/7/24/00 (13:00 - 16:00)  
GW DEPTH / ELEV.:  
GWT DATE / TIME:

TOTAL DEPTH:	42.0'
SOIL BORING:	42.0'
ROCK CORE:	0.0'
DRILLED BY:	MTB, TS
LOGGED BY:	ALS

BLOWS PER 6 IN. - 140 LB. HAMMER FALLING 30 IN. TO DRIVE A 2.0 IN O.D. SPLIT SPOON SAMPLER

NM - NOT MEASURED

PEN - PENETRATION LENGTH OF SAMPLER OR CORE BARREL

REC - RECOVERY LENGTH OF SAMPLE

ROD - LENGTH OF SOUND CORES > 4 IN. / LENGTH CORED. (%)

S - SPLIT SPOON SAMPLE

A - AUGER SAMPLE

U - UNDISTURBED SAMPLE

UF - UNOISTURBED SAMPLE. FIXED PISTON

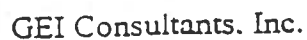
UO - UNDISTURBED SAMPLE, OSTERBERG

 - MEASURED GWT

== - ESTIMATED GWT

**NOTES:**

ELEV. (ft)	DEPTH (ft)	TYPE and NUMBER	SPT N per 6 in	PEN (in)	REC (in)	REMARKS	GWT LITH.	USCS SOIL AND ROCK DESCRIPTIONS	STRATA CHANGE	WELL
155	0	S1	5 4 4 6	24	18	Test boring advanced using 4 1/4" SSA.		(S1) 0"-2" Asphalt pavement (not sampled). 2"-3" (GP) NARROWLY GRADED GRAVEL WITH SAND: Crushed stone to 1", gray. Contains ~20% medium to coarse sand, light brown. 3"-18" (SW) WIDELY GRADED SAND: Fine to coarse sand, upper 7" is dark brown, lower 8" is light brown. FILL	-4.5'	
150	-5	S2	5 6 8 8	24	16	Test boring advanced using 3" FJC.		(S2) (SP) NARROWLY GRADED SAND: Medium sand with ~ 5% coarse sand and < 5% non-plastic fines, stratified, light brown.		
145	-10	S3	8 11 14 17	24	15			(S3) 0"-5" (SP) NARROWLY GRADED SAND: Fine sand with < 5% non-plastic fines, light brown. 5"-10" (ML) SILT: Silt, stratified, light brown. 10"-15" (SP) Similar to upper 5".		
140	-15	S4	9 12 13 15	24	12			(S4) (SP) NARROWLY GRADED SAND: Fine to medium sand with < 5% non-plastic fines, stratified, light brown.		
135	-20	S5	6 10 12 16	24	14			(S5) (SP-SM) NARROWLY GRADED SAND: Medium sand with ~ 10% fine sand, ~10% silt, and ~ 5% coarse sand, stratified, light brown.		
130	-25	S6	16 20 20 23	24	14			(S6) (SP) NARROWLY GRADED SAND: Medium to coarse sand with ~5% fine sand, reddish brown sand.		
						Water level on 07/24/00 @ 16:20.	=			
125	-30	S7	8 12 15 16	24	12			(S7) (SP-SM) NARROWLY GRADED SAND WITH SILT: Fine sand with ~ 10% silt, stratified, light brown. Contains occasional lenses of reddish brown fine sand.		
120	-35	S8	6 9 11 28	24	15	Drill head bouncing.		(S8) (SP) NARROWLY GRADED SAND: Fine sand, stratified, brown to reddish brown. Contains lenses of black sand and (2) 1/4" varves of silty clay, gray.	-36'	



**PROJECT:** Sargent Avenue Extension  
**NUMBER:** 98217  
**LOCATION:** Nashua, NH

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**BORING NUMBER**

SA-8

BORING LOCATION: STA 212+25 Right 30'  
GROUND ELEV. (NGVD): 155.1'  
START / FINISH DATE: 07/24/00 (13:00 - 16:00)  
GW DEPTH / ELEV.:  
GWT DATE / TIME:

TOTAL DEPTH: 42.0'  
SOIL BORING: 42.0'  
ROCK CORE: 0.0'  
DRILLED BY: MTB, TS  
LOGGED BY: ALS

BLOWS PER 6 IN. - 140 LB. HAMMER FALLING 30 IN. TO DRIVE A 2.0 IN O.D. SPLIT  
SPOON SAMPLER  
NM - NOT MEASURED  
PEN - PENETRATION LENGTH OF SAMPLER OR CORE BARREL  
REC - RECOVERY LENGTH OF SAMPLE  
RQD - LENGTH OF SOUND CORES > 4 IN. / LENGTH CORED. (%)  
S - SPLIT SPOON SAMPLE                      ✕ - MEASURED GWT  
A - AUGER SAMPLE  
U - UNDISTURBED SAMPLE  
UF - UNDISTURBED SAMPLE, FIXED PISTON                      = - ESTIMATED GWT  
UP - UNDISTURBED SAMPLE, OSTERBERG

**NOTES:**

[illegible]



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## TEST BORING LOG

PROJECT: Sargent Avenue Extension  
 NUMBER: 98217  
 LOCATION: Nashua, NH

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BORING NUMBER  
SA-9

BORING LOCATION: STA 212+70 Right 35'  
 GROUND ELEV. (NGVD): 155.5'  
 START / FINISH DATE: 07/28/00 (07:45 - 11:15)  
 GW DEPTH / ELEV.: Below well screen  
 GWT DATE / TIME: 08/30/00

TOTAL DEPTH: 42.0'  
 SOIL BORING: 42.0'  
 ROCK CORE: 0.0'  
 DRILLED BY: MTB, TS  
 LOGGED BY: ALS

BLOWS PER 6 IN. - 140 LB. HAMMER FALLING 30 IN. TO DRIVE A 2.0 IN O.D. SPLIT SPOON SAMPLER  
 NM - NOT MEASURED  
 PEN - PENETRATION LENGTH OF SAMPLER OR CORE BARREL  
 REC - RECOVERY LENGTH OF SAMPLE  
 RQD - LENGTH OF SOUND CORES > 4 IN. / LENGTH CORED. (%)  
 S - SPLIT SPOON SAMPLE  
 A - AUGER SAMPLE  
 U - UNDISTURBED SAMPLE  
 UF - UNDISTURBED SAMPLE, FIXED PISTON  
 UO - UNDISTURBED SAMPLE, OSTERBERG

NOTES: Observation well installed on 07/28/00.  
 Cover elevation 158.4'. Masterlock key #2196.  
 08/30/00 GWT reading - wet silt on tip of water level meter.  
 Actual GWT at time of measurement possibly below well.

ELEV. (ft)	DEPTH (ft)	TYPE and NUMBER	SPT N per 6 in	PEN (ln)	REC (ln)	REMARKS	GWT	LITH.	USCS SOIL AND ROCK DESCRIPTIONS	STRATA CHANGE	WELL
155		S1	3 6 15 8	24	16	Test boring advanced using 1 1/4" SSA.			(S1) 0"-6" Topsoil.		Bent. seal
									6"-16" (SW-SM) WIDELY GRADED SAND WITH SILT AND GRAVEL: Fine to coarse sand with ~ 25% silt, brown to dark brown. Contains subangular gravel to 3/4", dark gray. Contains ash, black. FILL		Coarse sand
150	-5	S2	9 9 8 9	24	12	Test boring advanced using 3" FJC.			(S2) 0"-5" (SW-SM) Similar to S1. FILL	-5.5'	2" nom. dia. screed. #40 PVC riser
									5"-7" (SP) NARROWLY GRADED SAND: Medium sand containing < 5% non-plastic fines, stratified, light brown.		
145	-10	S3	6 12 14 18	24	12				(S3) (SP) Similar to lower 7" of S2 except fine to medium sand.		Bent. 100 seal
140	-15	S4	10 10 13 15	24	12				(S4) (SP) Similar to S3.		
135	-20	S5	18 16 20 27	24	3				(S5) (SP) Similar to S3.		Coarse sand
130	-25	S6	12 17 25 27	24	10				(S6) (SP-SM) NARROWLY GRADED SAND WITH SILT: Fine sand with ~10% silt, stratified, brown to light brown.		2" nom. dia. screed. #40 PVC 1/32" slotted well screen
125	-30	S7	24 36 50	16	12	GWT on 08/30/00 - See Notes			(S7) 0"-2" (ML) SILT: Silt, stratified, olive to light brown.		Silt trap
									2"-10" (SP-SM) NARROWLY GRADED SAND WITH SILT: Fine sand with ~10% silt, stratified, light brown to reddish brown.		Bent. seal
120	-35	S8	25 19 15 21	24	6	Drill head bouncing.			(S8) (SW-SM) WIDELY GRADED SAND WITH GRAVEL: Fine to coarse sand, light brown. Contains ~ 15% subrounded gravel to 3/4", dark gray	-34'	Drill cuttings

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# TEST BORING LOG

**PROJECT:** Sargent Avenue Extension

NUMBER: 98217

LOCATION: Nashua, NH

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OF  
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BORG NUMBER

SA-9

**BORING LOCATION:** STA 212+70 Right 35'

GROUND ELEV. (NGVD): 155.6'

START / FINISH DATE: 07/26/00 (07:45 - 11:15)

GW DEPTH / ELEV.: Below well screen

GWT DATE / TIME: 08/30/00

TOTAL DEPTH: 42.0'

**SOIL BORING: 42.0'**

ROCK CORE: 0.0

DRILLED BY: MTB, TS

LOGGED BY: ALS

BLOWS PER 6 IN. - 140 LB. HAMMER FALLING 30 IN. TO DRIVE A 2.0 IN O.D. SPLIT SPOON SAMPLER

NM - NOT MEASURED

NM - NOT MEASURED  
PEN - PENETRATION

REC - RECOVERY LENGTH OF SAMPLE

REC - RECOVERY LENGTH OF SAMPLE  
RBL - LENGTH OF SOUND CORES  $\geq 4$  IN

RQD - LENGTH OF SOUND CORES  $\geq 4$  IN. / LENGTH CORED. (%)  
 3. GRAIT STCOON SAMPLE

S - SPLIT SPOON SAMPLE  
A - ANGER SAMPLE

A - AUGER SAMPLE  
U - UNDISTURBED S

U - UNDISTURBED SAMPLE

UF - UNDISTURBED SAMPLE, FIXED PISTON

UO - UNDISTURBED SAMPLE, OSTERBERG

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**MEASURED GWT**

- ESTIMATED GWT

NOTES: Observation wall installed on 07/26/00.

Cover elevation 158.4'. Masterlock key #2398.

08/30/0 GWT reading - wet silt on tip of water level meter.

Actual GWT at time of measurement possibly below well.

[illegible]



BORING LOCATION: STA 212+70 Left 15'  
GROUND ELEV. (NGVD): '48.4'  
START / FINISH DATE: 07/19/00 (06.45 - 10:20)  
GW DEPTH / ELEV.:  
GWT DATE / TIME:

TOTAL DEPTH: 41.0'  
SOIL BORING: 41.0'  
ROCK CORE: 0.0'  
DRILLED BY: MTB, TS  
LOGGED BY: ALS


BLOWS PER 5 IN. - 140 LB. HAMMER FALLING 30 IN. TO DRIVE A 2.0 IN O.D. SPLIT SPOON SAMPLER  
NM - NOT MEASURED  
PEN - PENETRATION LENGTH OF SAMPLER OR CORE BARREL  
REC - RECOVERY LENGTH OF SAMPLE  
RCD - LENGTH OF SOUND CORES > 4 IN. / LENGTH CORED. (%)

**NOTES:**

S - SPLIT SPOON SAMPLE		
A - AUGER SAMPLE	≡	- MEASURED GWT
U - UNDISTURBED SAMPLE		
UF - UNDISTURBED SAMPLE, FIXED PISTON	≡	- ESTIMATED GWT
UO - UNDISTURBED SAMPLE, OSTERBERG		

ELEV. (ft)	DEPTH (ft)	TYPE and NUMBER	SPT N per 6 in	PEN (in)	REC (in)	REMARKS	GWT	LITH.	USCS SOIL AND ROCK DESCRIPTIONS	STRATA CHANGE	WELL
145	0	S1	2 2 7 10	24	8	Test boring advanced using 4 1/4" SSA.			(S1) 0"-6" Topsoil. 6"-8" (SM) SILTY SAND WITH GRAVEL: Fine sand with ~ 5% medium sand, dark brown. Contains gravel (crushed stone) to 3/4", dark gray. FILL		
140	-5	S2	4 5 6 7	24	15	Test boring advanced using 3" FJC.			(S2) 0"-2" Similar to lower S1. FILL (S2 cont.) 2"-15" (SP) NARROWLY GRADED SAND: Medium sand with ~ 5% fine and ~ 5% coarse sands, stratified, light brown.	-5.3	
135	-10	S3	6 7 10 10	24	10				(S3) (SP) NARROWLY GRADED SAND: Medium sand with ~ 20% coarse and ~ 5% fine sands and < 5% non- plastic fines, stratified, light brown.		
130	-15	S4	10 14 14 20	24	12				(S4) 0"-3" (SP) NARROWLY GRADED SAND: Fine sand with ~ 20% medium sand, stratified, light brown. 3"-6" (ML) SILT: Silt, stratified, light gray. Contains (1) 1/4" lamination of medium to coarse sand, reddish brown. 6"-12" Similar to upper 0"-3".		
125	-20	S5	7 11 11 11	24	12	Gravelly Water level 07/19/00 @ 10:27.			(S5) (SW) WIDELY GRADED SAND: Fine to coarse sand, stratified, grading is finer with depth, light brown. Contains ~ 5% subrounded gravel, light brown.		
120	-25	S6	16 29 25 25	24	13				(S6) (SP) WIDELY GRADED SAND WITH GRAVEL: Medium to coarse sand with ~ 5% silt, stratified, light brown to reddish brown. Contains ~5% to 10% subangular gravel to 1 1/2", dark gray.		
115	-30	S7	14 10 5 5	24	10				(S7) (SP) NARROWLY GRADED SAND: Medium to coarse sand with < 5% nonplastic fines, brown, red, white, and dark gray. Contains ~ 5% subrounded gravel to 1/2"		
110	-35	S8	11 30 30 30	24	2				(S8) Angular gravel obstructed spoon.		

[illegible]

 <b>GEI Consultants, Inc.</b>	<b>TEST BORING LOG</b>	<b>PROJECT:</b> Sargent Avenue Extension	<b>PAGE</b> 1 <b>OF</b> 1	<b>BORING NUMBER</b> <b>SA-11</b>
		<b>NUMBER:</b> 98217		
		<b>LOCATION:</b> Nashua, NH		

<b>BORING LOCATION:</b> STA 212+85 Right 56' <b>GROUND ELEV. (NGVD):</b> 152.2' <b>START / FINISH DATE:</b> 07/19/00 (13:25 - 16:00) <b>GW DEPTH / ELEV.:</b> <b>GW DATE / TIME:</b>	<b>TOTAL DEPTH:</b> 37.5' <b>SOIL BORING:</b> 37.5' <b>ROCK CORE:</b> 0.0' <b>DRILLED BY:</b> MTB, TS <b>LOGGED BY:</b> ALS	<b>BLOWS PER 6 IN. - 140 LB. HAMMER FALLING 30 IN. TO DRIVE A 2.0 IN O.D. SPLIT SPOON SAMPLER</b> NM - NOT MEASURED PEN - PENETRATION LENGTH OF SAMPLER OR CORE BARREL REC - RECOVERY LENGTH OF SAMPLE RCD - LENGTH OF SOUND CORES > 4 IN. / LENGTH CORED. (%) S - SPLIT SPOON SAMPLE A - AUGER SAMPLE U - UNDISTURBED SAMPLE UF - UNDISTURBED SAMPLE, FIXED PISTON UO - UNDISTURBED SAMPLE, OSTERBERG
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**NOTES:**

- MEASURED GWT  
 - ESTIMATED GWT

ELEV. (ft)	DEPTH (ft)	TYPE and NUMBER	SPT N per 6 in	PEN (In)	REC (In)	REMARKS	GWT	LITH.	USCS SOIL AND ROCK DESCRIPTIONS	STRATA CHANGE	WELL
		A1	NM	NM	NM	Test boring advanced using 1 1/4" SSA.			(A1) 0"-2" Topsoil (by inspection). Fine sand, dark brown. Contains concrete rubble. FILL (description based on auger cuttings).		
160											
	-5	S1	9 5 8 11	24	6				(S1) (SP) NARROWLY GRADED SAND: Fine to medium sand with ~ 5% coarse sand, light brown. Contains asphalt rubble and roots. FILL	-7"	
155						Test boring advanced using 3" FJC.			(S1 cont.) Fine sand, stratified, light brown in tip of spoon.		
	-10	S2	8 5 11 11	24	11				(S2) (SP) NARROWLY GRADED SAND: Medium sand with < 5% non-plastic fines, stratified, light brown.		
150											
	-15	S3	5 7 7 9	24	10				(S3) (SP) Similar to S2.		
145											
	-20	S4	11 16 24 27	24	12				(S4) (SP-SM) NARROWLY GRADED SAND WITH SILT: Fine sand with ~10% nonplastic fines, stratified, light brown. Occasional lamina of fine sand, reddish brown.		
140											
	-25	S5	10 18 24 27	24	13				(S5) (SP-SM) Similar to S4.		
135											
	-30	S6	10 20 22 40	24	15				(S6) 0"-3" (ML) SILT: Silt, stratified, light brown. Occasional lamina of medium sand, light brown.		
130						Water level on 07/19/00 @ 16:24 Drill head bouncing.			3"-15" (SP) NARROWLY GRADED SAND: Stratified, light brown to orange medium sand.		
	-35										
	-37.5	S7	26 28 43	18	12				(S7) (SW) WIDELY GRADED SAND: Fine to coarse sand with ~ 5% silt, light brown. Contains ~ 10% subangular to angular gravel to 1". dark gray.		
125						B.O.B.					

Boring terminated at 37.5'.



GEI Consultants, Inc.

## TEST BORING LOG

PROJECT: Sargent Avenue Extension

NUMBER: 98217

LOCATION: Nasnua, NH

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BORING NUMBER

SA-12

BORING LOCATION: SAT 213+55 Left 95'  
GROUND ELEV. (NGVD): 45.7'  
START / FINISH DATE: 07/19/00 (11:00-13:00)  
GW DEPTH / ELEV.:  
GWT DATE / TIME:

TOTAL DEPTH: 32.0'  
SOIL BORING: 32.0'  
ROCK CORE: 0.0'  
DRILLED BY: MTB, TS  
LOGGED BY: ALS

BLOWS PER 6 IN. - 140 LB. HAMMER FALLING 30 IN. TO DRIVE A 2.0 IN O.D. SPLIT SPOON SAMPLER  
NM - NOT MEASURED  
PEN - PENETRATION LENGTH OF SAMPLER OR CORE BARREL  
REC - RECOVERY LENGTH OF SAMPLE  
RQD - LENGTH OF SOUND CORES > 4 IN. / LENGTH CORED, (%)  
S - SPLIT SPOON SAMPLE  
A - AUGER SAMPLE  
U - UNDISTURBED SAMPLE  
UF - UNDISTURBED SAMPLE, FIXED PISTON  
UO - UNDISTURBED SAMPLE, OSTERBERG

## NOTES:

- MEASURED GWT

- ESTIMATED GWT

ELEV. (ft)	DEPTH (ft)	TYPE and NUMBER	SPT N per 6 in	PEN (in)	REC (in)	REMARKS	GWT LTH	USCS SOIL AND ROCK DESCRIPTIONS	STRATA CHANGE	WELL
145		S1	7 12 10 12	24	20	Test boring advanced using 4 1/4" SSA.		(S1) 0"-4" Topsoil.  4"-20" (SP-SM) NARROWLY GRADED SAND WITH GRAVEL: Medium to coarse sand, dark brown. Contains subrounded and subangular gravel to 3/4", dark gray. Charcoal, brick fragments, and broken glass. FILL		
140	-5	S2	9 13 12 12	24	20	Test boring advanced using 3" FJC.		(S2) 0"-4" (SW-SM) Similar to lower S1.  4"-20" (SP) NARROWLY GRADED SAND: Medium sand with ~ 5% coarse and ~ 5% fine sands, and < 5% non- plastic fines, stratified, light brown.	-5.5'	
135	-10	S3	5 9 12 15	24	12			(S3) 0"-1" (ML) SILT: Silt, stratified, reddish brown to orange. 1"-12" (SP) NARROWLY GRADED SAND: Medium sand, stratified, light brown. Occasional lamina of fine sand, dark brown.		
130	-15	S4	20 32 35 45	24	10	Rock in tip of SS.		(S4) (SP) NARROWLY GRADED SAND: Medium sand, brown. Contains ~ 5% subrounded gravel to 1/2", dark gray.		
						Water level on 07/19/00 @ 13:02.	=			
125	-20	S5	20 24 27 30	24	14	Rock in tip of SS.		(S5) (SP) NARROWLY GRADED SAND: Fine to medium sand, stratified, light to reddish brown. Contains ~ 5% subrounded gravel to 1/2", dark gray.	-23'	
120	-25	S6	17 17 10 12	24	10	Rock in tip of SS.		(S6) (SP) NARROWLY GRADED SAND WITH GRAVEL. Medium to coarse sand with < 5% non-plastic fines, light brown, brown, dark gray, rose, and white. Contains ~15% rounded gravel to 1".		
115	-30	S7	9 17 15 17	24	14			(S7) 0"-3" (SW) Similar to S6.  (S7 cont.) 3"-11" (SM) SILTY SAND: Fine to medium sand with ~ 35% silt, light brown. Contains ~ 5% subrounded gravel to 1/2", dark gray.	-30.2'	
						B.O.B				
	-35									
110										

Boring terminated at 32'.

# TEST BORING LOG

**PROJECT:** Broad Street Parkway

NUMBER: 98217

**LOCATION:** Nashua, NH

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OF  
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**BORING NUMBER**

SA-13

**BORING LOCATION:** 205+79.140W  
**GROUND ELEV. (NGVD):** 189.1'  
**START / FINISH DATE:** 05/01/01  
**GW DEPTH / ELEV.:** Not Encountered  
**GW DATE / TIME:** Not Encountered

TOTAL DEPTH: 26'  
SOIL BORING: 26.0'  
ROCK CORE: 0.0'  
DRILLED BY: MTB  
LOGGED BY: ALS

BLOWS PER 6 IN. - 140 LB. HAMMER FALLING 30 IN. TO DRIVE A 2.0 IN O.D. SPLIT SPOON SAMPLER  
NM - NOT MEASURED  
PEN - PENETRATION LENGTH OF SAMPLER OR CORE BARREL  
REC - RECOVERY LENGTH OF SAMPLE  
ROD - LENGTH OF SOUND CORES > 4 IN. / LENGTH CORED. (%)

S - SPLIT SPOON SAMPLE	☒	- MEASURED GWL
A - AUGER SAMPLE		
U - UNDISTURBED SAMPLE		
UF - UNDISTURBED SAMPLE, FIXED PISTON	☒	- ESTIMATED GWL
UO - UNDISTURBED SAMPLE, OSTERBERG		

**NOTES:**

ELEV. (ft)	DEPTH (ft)	TYPE and NUMBER	SPT N per 6 in	PEN (in)	REC (in)	REMARKS	GWL	LITH.	USCS SOIL AND ROCK DESCRIPTIONS	STRATA CHANGE	WELL
0		S1	2 6 10 13	24	15	Boring adv. using 5 1/4" HSA.			(S1) 0"-3" TOPSOIL: Fine sand, ~15% silt, roots, dark brown to black.		
185	-5	S2	6 8 9 10	24	18	Drill rig bouncing.			3"-15" (SP) NARROWLY GRADED SAND WITH GRAVEL: Fine to medium sand, ~20% subangular gravel to 1", brown to orange, FILL.	5.5'	
180	-10	S3	20 17 12 10	24	16	Drill rig bouncing.			(S2) 0"-6" REMNANT TOPSOIL: Fine sand, roots, dark brown to black.		
175	-15	S4	11 9 7 6	24	10	Changed sampling interval due to equipment malfunction (sheared 12" coupling).			(S2 cont.) 6"-18" (SW) WIDELY GRADED SAND: Stratified, ~5% subrounded gravel to 5/8", light brown, orange, gray.		
170	-20	S5	4 8 8 5	24	14				(SW) WIDELY GRADED SAND WITH GRAVEL: ~20% to 25% angular to subrounded gravel to 5/8" with occasional to 1 1/4", brown.		
165	-25	S6	4 12 12 10	24	10				(SW) Similar to S3.	-17'	
160	-30								(SW) WIDELY GRADED SAND: ~10% subrounded gravel to 3/4" with occasional to 1 1/4", light brown.		
155	-35					B.O.B.			(SW) Similar to S5 except does not contain gravel.		
									Test boring terminated at 26.0'		

BORING LOCATION <u>96+95, Rt 11'</u>		DATE START - FINISH <u>11/13/98-11/13/98</u>		B1	
GROUND ELEVATION <u>174.6</u>		DATALOGGED BY <u>Maine Test Boring</u>		TOTAL DEPTH (Ft.) <u>6.4</u>	
GROUND WATER EL. <u>      </u> DATE <u>      </u>		LOGGED BY <u>Brian F Jankauskas</u>		Page 1 of 1	

DEPTH FT	SAMPLE				SOIL AND ROCK DESCRIPTIONS	FIELD TESTS	STRATUM DESCRIP.	Remarks
	TYPE S NO	BLOWS S IN	PEN " "	REC #				
0.4	S1	29-38 66-33	2	1.9	ASPHALT SAND WITH GRAVEL (SW) Widely graded. Mostly fine to coarse sand, 20% sub-rounded to angular fine gravel, <5% non-plastic fines, brown with black, FILL.		ASPHALT FILL	
2.4	S2	13-7 5-6	2	1.3	SAND (SP) Narrowly graded. Mostly fine to medium sand, <5% non-plastic fines, orange-brown.		SAND	
4.4 5	S3	6-7 8-8	2	1.5	SAND (SW) Widely graded. Mostly fine to coarse sand, <5% non-plastic fines, brown.			
6.4	Bottom of Boring 6.4'							
10								
15								
20								
25								
30								



BLOWS PER 6 IN. - 140 LB. HAMMER FALLING 30 IN. TO DRIVE A 2.0 IN. OD SPLIT SPOON SAMPLER  
 WOR-WEIGHT OF RODS  
 WOH-WEIGHT OF RODS AND HAMMER  
 PEN-PENETRATION LENGTH OF SAMPLER OR CORE BARREL  
 REC-LENGTH OF RECOVERED SAMPLE  
 RQD-LENGTH OF SOUND CORE SECTIONS > 4 IN./LENGTH CORED. %  
 S-SPLIT SPOON SAMPLE Sv-TORVANEQp-PENETROMETER  
 U-UNDISTURBED SAMPLE V GROUND WATER

Notes: Continuous spoons driven  
  
 Broad Street Parkway

GEI Consultants, Inc.  
 Project 98217  
 February 1999

BORING LOCATION: Sta 888+00 11S  
GROUND ELEV. (NGVD): 155.0'  
START / FINISH DATE: 02/28-03/01/01  
GW DEPTH / ELEV.: 130.3'  
GW DATE / TIME: 03/02/01 (11:30)

TOTAL DEPTH:	33.6'
SOIL BORING:	31.6'
ROCK CORE:	2'
DRILLED BY:	MTB
LOGGED BY:	ALS



BLOWS PER 6 IN. - 140 LB. HAMMER FALLING 30 IN. TO DRIVE A 2.0 IN O.D. SPLIT  
SPOON SAMPLER  
NM - NOT MEASURED  
PEN - PENETRATION LENGTH OF SAMPLER OR CORE BARREL  
REC - RECOVERY LENGTH OF SAMPLE  
RQD - LENGTH OF SOUND CORES > 4 IN. / LENGTH CORED. (%)  
S - SPLIT SPOON SAMPLE  
A - AUGER SAMPLE  - MEASURED GWL  
U - UNDISTURBED SAMPLE  
UF - UNDISTURBED SAMPLE, FIXED PISTON  - ESTIMATED GWL  
UO - UNDISTURBED SAMPLE, OSTERBERG

NOTES: Ambient OVM readings = 0 ppm  
OVM during drilling = 0 ppm (outside temp = 28 F)  
OVM headspace ~20 min (inside temp = -70 F)  
Soil samples from S6 and S7 submitted for VOC and TPH anal.

ELEV. (ft)	DEPTH (ft)	TYPE and NUMBER	SPT N per 6 in	PEN (in)	REC (in)	REMARKS	GWL	LITH.	USCS SOIL AND ROCK DESCRIPTIONS	STRATA CHANGE	WELL
155	0	A1	NM	24	NM	Boring adv. using 4" SSA.			0"-2" ASPHALT (not sampled)		Road box, (2) 1/2" head dia hex bolts, installed flush.
		S1	2	24	17	Frozen soil 0'- 4"			(A1) (SP) NARROWLY GRADED SAND: Fine sand, <5% nonplastic fines, ~3% subrounded gravel to 3/8", brown, FILL. (description based on auger cuttings)		2" dia PVC riser.
150	-5	S2	2	24	17	OVM = 0 ppm			(S1) (SP) NARROWLY GRADED SAND: Fine sand, <5% nonplastic fines, brown, FILL.		Auger cutting backfill.
		S2	3	24	17	OVM = 0 ppm			(S2) 0"-4" (SW) WIDELY GRADED SAND: ~15% rounded to subrounded gravel to 3/8", light brown, FILL.		
		S2	5	24	17	Boring adv. using 5 1/4" HSA.			4"-17" (SP) NARROWLY GRADED SAND: Fine sand, ~10% medium sand, <5% nonplastic fines, light brown, FILL.		
		S2	6	24	17	OVM = 0 ppm			(S3) 0"-6" (SP) NARROWLY GRADED SAND: Fine to medium sand, ~10% rounded gravel to 3/8", brown, FILL.	10.5'	
145	-10	S3	18	24	21				(S3 cont.) 6"-21" (SP-SM) NARROWLY GRADED SAND WITH SILT. Stratified, fine sand, ~10% silt, light brown to olive.		Bentonite upper seal 12'- 15'
		S3	5	24	21						
		S3	5	24	21						
		S3	10	24	21						
140	-15	S4	5	24	16	OVM = 0 ppm			(S4) (SP) NARROWLY GRADED SAND: Stratified, fine sand, <3% nonplastic fines, light brown to gray.		
		S4	6	24	16						
		S4	7	24	16						
		S4	10	24	16						
135	-20	S5	5	24	18	OVM = 0 ppm			(S5) (SP) NARROWLY GRADED SAND: Stratified, medium sand, ~5% subrounded gravel to 3/8", light brown. 3/8"-thick layer of (ML) SILT @ 20.25'.		0.010' slotted well screen 16.6'-31.6' (15')
		S5	6	24	18	Drill head bouncing.					
		S5	7	24	18	OVM = 0 ppm					
		S5	11	24	18	Silt layer.					
		S5		24	18	Moist soil.					
		S5		24	18	Auger plug wet, petroleum odor.					
130	-25	S6	10	24	15	OVM = 587 ppm			(S6) 0"-6" (SW) WIDELY GRADED SAND: ~15% rounded to subrounded gravel to 3/8", black.		Medium well sand.
		S6	17	24	15	OVM = 578 ppm			(6"-15") (SP) NARROWLY GRADED SAND: Stratified, fine to medium sand, (1) 1 1/4" dia subangular stone in SS, brown to olive.		
		S6	18	24	15						
		S6	21	24	15						
125	-30	S7	7	20	16	OVM = 170 ppm			(S7) (SP-SM) NARROWLY GRADED SAND WITH SILT: Unsorted, fine to medium sand, ~15% silt, ~5% subangular gravel to 1 1/4".	31.7'	2" deep silt trap
		S7	19	20	16						
		S7	18	20	16						
		S7	50/1"	20	16						
		R1	3 min	24	24	NX core .			(R1) BEDROCK: Fine grained, very hard. RQD=42%, GRANITE.		Bentonite lower seal 32'- 33.6'
		R1	6 min	24	24						
		R1		24	24	B.O.B.			=====		
		R1		24	24				Boring terminated at 33.6'.		

BORING LOCATION: Sta 887+59.50S  
GROUND ELEV. (NGVD): 154.2'  
START / FINISH DATE: 03/01/01  
GW DEPTH / ELEV.: Not Encountered  
GW DATE / TIME: Not Encountered

TOTAL DEPTH:	25.4'
SOIL BORING:	22.4'
ROCK CORE:	3'
DRILLED BY:	MTB
LOGGED BY:	ALS

BLOWS PER 6 IN. - 140 LB. HAMMER FALLING 30 IN. TO DRIVE A 2.0 IN O.D. SPLIT  
SPOON SAMPLER  
NM - NOT MEASURED  
PEN - PENETRATION LENGTH OF SAMPLER OR CORE BARREL  
REC - RECOVERY LENGTH OF SAMPLE  
RQD - LENGTH OF SOUND CORES > 4 IN. / LENGTH CORED, (%)  
S - SPLIT SPOON SAMPLE  
A - AUGER SAMPLE  - MEASURED GWL  
U - UNDISTURBED SAMPLE  
UF - UNDISTURBED SAMPLE, FIXED PISTON  
UO - UNDISTURBED SAMPLE, OSTERBERG  - ESTIMATED GWL

**NOTES:** Ambient OVM readings = 0 ppm  
OVM headspace -20 min (inside temp = -70 F)  
Soil samples from S6 submitted for VOC and TPH anal.

[illegible]





GEI Consultants, Inc.

## TEST BORING LOG

PROJECT: Broad Street Parkway  
 NUMBER: 98217  
 LOCATION: Nashua, NH

PAGE  
1  
OF  
1

BORING NUMBER  
**MA3**

BORING LOCATION: Sta 887+36 19S  
 GROUND ELEV. (NGVD): 154.3'  
 START / FINISH DATE: 02/28/01  
 GW DEPTH / ELEV.: 130.3'  
 GW DATE / TIME: 03/01/01 (07:30)

TOTAL DEPTH: 32'  
 SOIL BORING: 29.5'  
 ROCK CORE: 2.5'  
 DRILLED BY: MTB  
 LOGGED BY: ALS

BLOWS PER 6 IN. - 140 LB. HAMMER FALLING 30 IN. TO DRIVE A 2.0 IN O.D. SPLIT SPOON SAMPLER  
 NM - NOT MEASURED  
 PEN - PENETRATION LENGTH OF SAMPLER OR CORE BARREL  
 REC - RECOVERY LENGTH OF SAMPLE  
 RQD - LENGTH OF SOUND CORES > 4 IN. / LENGTH CORED, (%)  
 S - SPLIT SPOON SAMPLE  
 A - AUGER SAMPLE  
 U - UNDISTURBED SAMPLE  
 UF - UNDISTURBED SAMPLE, FIXED PISTON  
 UO - UNDISTURBED SAMPLE, OSTERBERG

NOTES: Ambient OVM readings = 0.9 ppm (outside temp = -28 F)  
 OVM headspace after -6 hrs (inside temp -70 F) = Nondetect  
 Soil samples from S6 submitted for VOC and TPH analysis.

MEASURED GWL  
 ESTIMATED GWL

ELEV. (ft)	DEPTH (ft)	TYPE and NUMBER	SPT N per 6 in	PEN (in)	REC (in)	REMARKS	GWL LITH.	USCS SOIL AND ROCK DESCRIPTIONS	STRATA CHANGE	WELL
	0	S1	12 10 6 6	24	15	Boring adv. using 4" SSA		0"-1 1/2" ASPHALT (not sampled) (S1) (SP-SM) NARROWLY GRADED SAND WITH SILT: Fine sand, ~10% nonplastic fines, <3% subrounded gravel to 1 1/2", brown, light brown, occasional black, FILL.		Road box, (2) 1/2" head dia hex bolts, installed flush.
150	-5	S2	1 2 3 5	24	12	Boring adv. using 5 1/4" HSA  Boring adv. using 4" CWB		(S2) (SP) NARROWLY GRADED SAND: Fine sand, <5% nonplastic fines, <3% subrounded gravel to 3/8", brown to light brown, FILL.		2" dia PVC riser
145	-10	S3	19 21 40 38	24	15			(S3) 0"-9" (SW) WIDELY GRADED SAND WITH GRAVEL. Fine to medium sand, ~25% angular to subangular gravel to 3/8", <5% nonplastic fines, brown with occasional orange layer, FILL.	11'	Auger cutting backfill.
140	-15	S4	16 28 21 17	24	12	Drill head bouncing  Rock in tip of SS		(S4) WIDELY GRADED SAND WITH GRAVEL: ~35% angular gravel to 1", ~5% silt, light brown.		Bentonite upper seal 15'- 17.8'
135	-20	S5	13 24 21 40	24	10	Rock in tip of SS		(S5) (SP) NARROWLY GRADED SAND: Stratified, fine sand, light brown.		Medium well sand.
130	-25	S6	32 28 15 19	24	11			(S6) (SP) Similar to S5 except ~10% angular gravel to 1/2".		0.010' slotted well screen 18.82'-28.82' (10').
125	-30	R1				SS refusal NX core		(R1) BEDROCK: Weathered, fine grained, gray, RQD = 42%, GRANODIORITE.	29.5'	2" deep silt trap
120	-35					B.O.B.		Boring terminated at 32'		Bentonite lower seal 30.3'-32'

	<b>TEST BORING LOG</b>	<b>PROJECT:</b> Broad Street Parkway <b>NUMBER:</b> 98217 <b>LOCATION:</b> Nashua, NH	<b>PAGE</b> 1 <b>OF</b> 1	<b>BORING NUMBER</b>  N1
<b>BORING LOCATION:</b> Sta 867+44 215W <b>GROUND ELEV. (NGVD):</b> 129.05' <b>START / FINISH DATE:</b> 03/05/01 <b>GW DEPTH / ELEV.:</b> 117.85' <b>GW DATE / TIME:</b> 03/05/01 (18:00)		<b>TOTAL DEPTH:</b> 22' <b>SOIL BORING:</b> 22' <b>ROCK CORE:</b> 0' <b>DRILLED BY:</b> MTB <b>LOGGED BY:</b> CSM		
<b>NOTES:</b> Ambient OVM readings = 0 ppm OVM during drilling = 0 ppm (outside temp = 25 F) OVM headspace ~20 min (inside temp = -70 F)		<b>BLOWS PER 6 IN. - 140 LB. HAMMER FALLING 30 IN. TO DRIVE A 2.0 IN O.D. SPLIT SPOON SAMPLER</b> NM - NOT MEASURED PEN - PENETRATION LENGTH OF SAMPLER OR CORE BARREL REC - RECOVERY LENGTH OF SAMPLE RQD - LENGTH OF SOUND CORES > 4 IN. / LENGTH CORED, (%) S - SPLIT SPOON SAMPLE A - AUGER SAMPLE U - UNDISTURBED SAMPLE UF - UNDISTURBED SAMPLE, FIXED PISTON UO - UNDISTURBED SAMPLE, OSTERBERG		

ELEV. (ft)	DEPTH (ft)	TYPE and NUMBER	SPT N per 6 in	PEN (in)	REC (in)	REMARKS	GWL LITH.	USCS SOIL AND ROCK DESCRIPTIONS	STRATA CHANGE	WELL
	0					Boring adv. using 4" SSA.		0"-1 1/2" ASPHALT (not sampled)		Road box. (2) 1/2" head dia hex bolts, installed flush.
125	-5	S1 S2	5 10 16	24 24	15 15	Frozen soil 0'-4"		(S1) (SM) SILTY SAND: Fine to coarse sand, ~30% nonplastic fines, coal ash, ~5% fine angular gravel, dark brown to black, FILL. (S2) (SM) SILTY SAND: Similar to S1, FILL.		2" dia PVC riser.
120	-10	S3	4 2 1 1	24	10	Boring adv. using CWB.		(S3) (SM) SILTY SAND: Stratified fine sand, ~40% nonplastic fines, <5% subangular gravel to 3/8", roots present, brown.	-8	Auger cutting backfill.  Bentonite upper seal 6'5"-9'
115	-15	S4	2 3 3 4	24	17			(S4) (ML) SILT WITH SAND: Stratified silt, ~35% fine sand, ~15% clay, light brown to gray.		0.010' slotted well screen 10'-20' (10')
110	-20	S5	23 16 12 10	24	8	Drill head bouncing.		(S5) (SW-SM) WIDELY GRADED SAND WITH SILT AND GRAVEL: Unsorted, widely graded sand, ~30% angular gravel to 1", ~20% nonplastic fines, brown.	-18	Medium well sand.
						B.O.B.		Boring terminated at 22'.		2" deep silt trap
105	-25			24						
100	-30			20						
95	-35			24						

BORING LOCATION: Sta 874+90.55E  
GROUND ELEV. (NGVD): 152.97'  
START / FINISH DATE: 03/06-07/01  
GW DEPTH / ELEV.: 121.42'  
GW DATE / TIME:

TOTAL DEPTH:	39.8'
SOIL BORING:	37.8'
ROCK CORE:	2'
DRILLED BY:	MTB
LOGGED BY:	CSM

BLOWS PER 6 IN. - 140 LB. HAMMER FALLING 30 IN. TO DRIVE A 2.0 IN O.D. SPLIT  
SPOON SAMPLER


NM - NOT MEASURED

PEN - PENETRATION LENGTH OF SAMPLER OR CORE BARREL

REC - RECOVERY LENGTH OF SAMPLE


RQD - LENGTH OF SOUND CORES > 4 IN. / LENGTH CORED, (%)

S - SPLIT SPOON SAMPLE

A - AUGER SAMPLE    - MEASURED GWL

U - UNDISTURBED SAMPLE

UF - UNDISTURBED SAMPLE, FIXED PISTON

IIO - UNDISTURBED SAMPLE, OSTERBERG    - ESTIMATED GWL

**NOTES:** Ambient OVM readings = 0 ppm  
OVM during drilling = 0 ppm (outside temp = 25 F)  
OVM headspace -20 min = 0 ppm (inside temp = -70 F)

ELEV. (ft)	DEPTH (ft)	TYPE and NUMBER	SPT N per 6 in	PEN (in)	REC (in)	REMARKS	GWL	LITH.	USCS SOIL AND ROCK DESCRIPTIONS	STRATA CHANGE
-0		S1	8	24	17	Boring adv. using 4" SSA.			(S1) (SM) SILTY SAND: Fine to medium sand, ~40% nonplastic fines and coal ash, <5% fine angular gravel to 5/8", dark brown to black, FILL.	Road box, (2) 1/2" head dia hex bolts, installed flush.
-150		S2	3	24	12				(S2) (SM) Similar to S1, FILL.	2" dia PVC riser 0.4'- 27.7'.
-5		S3	1	24	6				(S3) (SM) Similar to S1, FILL.	
		S4	1	24	8				(S4) (SM) Similar to S1 except ~10% subangular gravel, FILL.	Auger cutting and well sand backfill 1'-23'.
-145		S5	2	24	13				(S5) (SP) NARROWLY GRADED SAND: Stratified, fine to medium sand, ~5% nonplastic fines, lt. brown and orange.	-8
-10		S6	8	24	14	Boring adv. using CWB.			(S6) (SP) Similar to S5.	
		S7	9	24	12				(S7) (SP) Similar to S5.	
-140		S8	4	24	0				(S8) NO RECOVERY	
-15		S9	8	24	11				(S9) (SP) NARROWLY GRADED SAND: Stratified fine to medium sand, ~5% nonplastic fines, lt. brown and orange. Similar to S5, but more medium sand.	
-135		S10	11	24	0				(S10) NO RECOVERY	
-20		S11	6	24	11				(S11) (SP) Similar to S9 except occasional <5% subangular gravel to 3/8".	
-130		S12	10	24	13				(S12) (SP) Similar to S11.	
-25		S13	15	24	13				(S13) (SP) Similar to S11.	Bentonite upper seal 23'- 26'
-125		S14	16	24	13				(S14) (SP) Similar to S11, contains 2" layer of angular gravel to 3/8" from 10"-12".	0.010' slotted well screen 27.7'-37.7' (10')
-30		S15	22	24	13				(S15) (SP) Similar to S11.	
		S16	13	24	12				(S16) (SP) Similar to S11.	
-120		S17	11	18	15				(S17) (SM) SILTY SAND: Stratified, fine sand, ~40% nonplastic fines, ~5% fine angular gravel to 3/8", lt. brown, (2) 2"-thick layers of clay, gray, (1) layer of coarse sand and gravel, orange.	-33 Medium well sand 26'-39.8'.  -35
-35		S18	50/0.1	24	13				(S18) (SM) SILTY SAND WITH GRAVEL: Unsorted, fine to coarse sand, ~40% angular gravel to 1 1/4", ~20% nonplastic fines, lt. brown.	2" deep silt trap



BORING LOCATION <u>See Figure 3</u>				DATE START-FINISH <u>02-26-90</u> - <u>02-26-90</u>				MW1	
GROUND ELEVATION (Ft.) <u>-123.0</u>				DATUM <u>LOCAL</u>		DRILLED BY <u>D. Arquette</u>		GeoLogic, Inc.	
GROUND WATER EL. (Ft.) <u>-117.2</u>				DATE <u>03-06-90</u>		LOGGED BY <u>T. Bobowski</u>		TOTAL DEPTH (Ft.) <u>16.3</u>	
								PG. <u>1</u> OF <u>1</u>	

DEPTH FT	SAMPLE				SAMPLE DESCRIPTIONS	FIELD TESTS	STRATUM DESCRIP.	EQUIPMENT INSTALLATION
	TYPE & No	BLOWS /6 IN	PEN IN.	REC IN.				
5	S1	51-66 48-25	24	20	NARROWLY GRADED SAND WITH SILT (SP-SM); mostly fine sand, <10% m-c sand, ~10% non- plastic fines, trace gravel, gray. (FILL)	PID<1	Fill	Locking stand-pipe with 2.7' stick-up Cement seal. Top of screen: 1.8'    2.0-inch ID SCH 40 PVC 0.010-slot screen surrounded by filter sand.  Bottom of screen: 14.8'  Natural backfill (hole collapsed)
	S2	1-2 2-5	24	24	SILTY SAND (SM); mostly fine sand, ~40% low plasticity silt, trace gravel, brown. (FILL)	PID<1		
10	S3	8-46 28/2"	14	12	..... Top 6": NARROWLY GRADED SAND (SP); mostly f-m sand, <5% non-plastic fines, tr med sand, gray. Bot 6": Similar to Top 6"; black.	PID<1	Narrowly Graded Sand	
15	S4	22-60 47/3"	15	12	NARROWLY GRADED SAND (SP); Similar to Bottom 6" of S3.	PID<1		
					Bottom of Borehole - 16.3'			
20								

REMARKS: 1) Soil headspace vapors monitored with a Photoionization Detector (PID). Values in parts per million (ppm). 2) Boring was advanced with 4.25-inch hollow stem augers to 15.0'.	ENVIRONMENTAL SAMPLING SECOND NASHUA RIVER CROSSING NASHUA, NEW HAMPSHIRE  Date <u>04-10-90</u> Project <u>89414</u>  ♦ GEI CONSULTANTS, INC.
BLOWS PER 6" - 140 LB HAMMER FALLING 30" TO DRIVE A 2" O.D. SPLIT SPOON SAMPLER PEN - PENETRATION LENGTH OF SAMPLER OR CORE BARREL REC - RECOVERY LENGTH OF SAMPLE ROD - LENGTH OF SOUND CORES > 4" ÷ LENGTH CORED, % S - SPLIT SPOON SAMPLE U - UNDISTURBED SAMPLE UF - FIXED PISTON UO - OSTERBERG  GROUND WATER BOUNDARIES BETWEEN STRATA ARE APPROXIMATE ONLY.	

BORING LOCATION See Figure 3 DATE START-FINISH 02-26-90 - 02-27-90 MW2  
 GROUND ELEVATION (Ft.) -152.0 DATUM LOCAL DRILLED BY D. Arquette Geologic, Inc.  
 GROUND WATER EL. (Ft.) -120.4 DATE 03-06-90 LOGGED BY T. Bobowski TOTAL DEPTH (Ft.) 37.0 PG. 1 OF 2

DEPTH FT	SAMPLE				SAMPLE DESCRIPTIONS	FIELD TESTS	STRATUM DESCRIP.	EQUIPMENT INSTALLATION
	TYPE & No	BLOWS /6 IN	PEN IN.	REC IN.				
5	S1	18-19 9-5	24	20	WIDELY GRADED SAND WITH GRAVEL (SW); f-m-c sand, ~20% f-c subrounded gravel, cinders, brick fragments, ~10% non-plastic fines, black. (FILL)	PID<1	Asphalt	Road box flush w/ ground surface Cement seal.
	S2	5-6 4-9	24	4	WIDELY GRADED SAND (SW); Similar to S1, <5% non-plastic fines, trace gravel. (FILL)	PID<1	Fill	2.0-inch ID SCH 40 PVC solid riser surrounded by backfill from boring.
10	S3	1-1 3-3	24	8	WIDELY GRADED SAND (SW); Similar to S2, brown. (FILL)	PID<1		
15					(Note 3: In original boring, drilled through culvert. Sealed original hole and moved 23' S. Samples below 12' are from redrilled boring.)			
	S4	3-2 1-5	24	6	WIDELY GRADED SAND (SW); Similar to S3. (FILL)	PID<1		
20					.....		~18.0'	
	S5	6-8 10-15	24	20	NARROWLY GRADED SAND (SP); mostly fine sand, <5% med sand, <5% non-plastic fines, slightly stratified, tan.	PID<1	Narrowly Graded Sand	
25	S6	8-14 17-20	24	24	NARROWLY GRADED SAND (SP); Similar to S5.	PID<1		Bentonite seal: 25.5' to 26.0'  Top of screen: 26.7'  2.0-inch ID SCH 40 PVC 0.010-slot screen surrounded by filter sand.

REMARKS: 1) Soil headspace vapors monitored with a Photoionization Detector (PID). Values in parts per million (ppm). 2) Boring was advanced with 4.25-inch hollow stem augers to 37.0'. 3) Samples at depths 0'-12' from original boring 23' north of well.

BLOWS PER 6" - 140 LB HAMMER FALLING 30" TO DRIVE A 2" O.D. SPLIT SPOON SAMPLER  
 PEN - PENETRATION LENGTH OF SAMPLER OR CORE BARREL REC - RECOVERY LENGTH OF SAMPLE  
 RGD - LENGTH OF SOUND CORES > 4" ÷ LENGTH CORED, % S - SPLIT SPOON SAMPLE  
 U - UNDISTURBED SAMPLE UF - FIXED PISTON UO - OSTERBERG  
 BOUNDARIES BETWEEN STRATA ARE APPROXIMATE ONLY.


ENVIRONMENTAL SAMPLING  
 SECOND NASHUA RIVER CROSSING  
 NASHUA, NEW HAMPSHIRE

Date 04-10-90 Project 89414


GEI CONSULTANTS, INC.

BORING LOCATION See Figure 3				DATE START-FINISH 02-26-90 - 02-27-90				MW2	
GROUND ELEVATION (Ft.) -152.0				DATUM LOCAL		DRILLED BY D. Arquette		Geologic, Inc.	
GROUND WATER EL. (Ft.) -120.4				DATE 03-06-90		LOGGED BY T. Bobowski		TOTAL DEPTH (Ft.) 37.0	
								PG. 2 OF 2	

DEPTH FT	SAMPLE				SAMPLE DESCRIPTIONS	FIELD TESTS	STRATUM DESCRIP.	EQUIPMENT INSTALLATION
	TYPE & No	BLOWS /6 IN	PEN IN.	REC IN.				
35	S7	17-16 20-33	24	24	Top 21": NARROWLY GRADED SAND (SP); Similar to S5. Bottom 3": WIDELY GRADED SAND WITH GRAVEL (SW); f-m-c sand, ~20% fine gravel, <5% non-plastic fines, brown.	PID<1	Narrowly Graded Sd. 31.8'	 2.0-inch ID SCH 40 PVC 0.010-slot screen surrounded by filter sand.  Bottom of screen: 36.7'
	S8	20-27 57-77	24	24	WIDELY GRADED SAND WITH GRAVEL (SW); Similar to bottom 3" of S7, ~10% non-plastic fines, brown. (Cobbles encountered while augering.)	PID<1	Widely Graded Sand w/ Gravel, Cobbles	
40					Bottom of Borehole - 37.0' Auger Refusal			

REMARKS: 1) Soil headspace vapors monitored with a Photoionization Detector (PID). Values in parts per million (ppm). 2) Boring was advanced with 4.25-inch hollow stem augers to 37.0'. 3) Samples at depths 0'-12' from original boring 23' north of well.		ENVIRONMENTAL SAMPLING SECOND NASHUA RIVER CROSSING NASHUA, NEW HAMPSHIRE  Date 04-10-90 Project 89414  GEI CONSULTANTS, INC.
BLOWS PER 6" - 140 LB HAMMER FALLING 30" TO DRIVE A 2" O.D. SPLIT SPOON SAMPLER PEN - PENETRATION LENGTH OF SAMPLER OR CORE BARREL REC - RECOVERY LENGTH OF SAMPLE RQD - LENGTH OF SOUND CORES > 4" ÷ LENGTH CORED, % S - SPLIT SPOON SAMPLE U - UNDISTURBED SAMPLE UF - FIXED PISTON UO - OSTERBERG  GROUND WATER BOUNDARIES BETWEEN STRATA ARE APPROXIMATE ONLY.		

BORING LOCATION <u>See Figure 3</u>				DATE START-FINISH <u>02-28-90</u> - <u>03-01-90</u>		<u>MW3</u>		
GROUND ELEVATION (Ft.) <u>162.0</u>		DATUM <u>NGVD</u>		DRILLED BY <u>D. Arquette</u>		Geologic, Inc.		
GROUND WATER EL. (Ft.) <u>&lt;138.8</u>		DATE <u>03-06-90</u>		LOGGED BY <u>T. Bobowski</u>		TOTAL DEPTH (Ft.) <u>23.5</u>		
PG. <u>1</u> OF <u>1</u>								
DEPTH FT	SAMPLE				SAMPLE DESCRIPTIONS	FIELD TESTS	STRATUM DESCRIP.	EQUIPMENT INSTALLATION
	TYPE & No	BLOWS /6 IN	PEN IN.	REC IN.				
5					Cobbles and boulders encountered while augering.		Asphalt	Road box flush w/ ground surface Cement seal.
	S1	28-66	12	3	WIDELY GRADED SAND (SW); f-m-c sand, ~10% non-plastic fines, trace gravel, brown. (FILL)	PID<1	Fill	
10					.....		~8.0'	2.0-inch ID SCH 40 PVC solid riser surrounded by backfill from boring.
	S2	10-9 12-7	24	20	NARROWLY GRADED SAND (SP); mostly fine sand, <5% m-c sand, <5% non-plastic fines, slightly stratified, tan.	PID<1	Narrowly Graded Sand	
15					Top 12": NARROWLY GRADED SAND (SP); Similar to S2.	PID<1	15.5'	Bentonite seal: 14.5'to 15.0'
	S3	9-10 18-27	24	18	Bot 6": WIDELY GRADED SAND WITH GRAVEL (SW); f-m-c sand, f-c subangular gravel, <5% non-plastic fines, brown.  Cobbles encountered while augering.	PID<1	Widely Graded Sand, Gravel, Cobbles, Boulders	
20					WIDELY GRADED SAND WITH GRAVEL (SW); Similar to Bottom 6" of S3. (Rock fragments)	PID<1		Top of screen: 16.2'
	S4	54-83 120	18	12				
25					Recovered rock fragments and sand.	PID<1		2.0-inch ID SCH 40 PVC 0.010-slot screen surrounded by filter sand.
	S5	77/2	2	2				
					Bottom of Borehole - 23.5' Auger Refusal			Bottom of screen: 23.2'
REMARKS: 1) Soil headspace vapors monitored with a Photoionization Detector (PID). Values in parts per million (ppm). 2) Boring was advanced with 4.25-inch hollow stem augers to 23.2'. 3) Monitoring well was dry at the time of installation.								ENVIRONMENTAL SAMPLING SECOND NASHUA RIVER CROSSING NASHUA, NEW HAMPSHIRE  Date <u>04-10-90</u> Project <u>89414</u> GEI CONSULTANTS, INC.
BLOWS PER 6" - 140 LB HAMMER FALLING 30" TO DRIVE A 2" O.D. SPLIT SPOON SAMPLER PEN - PENETRATION LENGTH OF SAMPLER OR CORE BARREL REC - RECOVERY LENGTH OF SAMPLE RQD - LENGTH OF SOUND CORES > 4" ÷ LENGTH CORED, % S - SPLIT SPOON SAMPLE U - UNDISTURBED SAMPLE UF - FIXED PISTON UO - OSTERBERG BOUNDARIES BETWEEN STRATA ARE APPROXIMATE ONLY.								



BORING LOCATION <u>See Figure 3</u>				DATE START-FINISH <u>03-01-90</u> - <u>03-02-90</u>				<u>MW6</u>	
GROUND ELEVATION (Ft.) <u>-152.0</u> DATUM <u>LOCAL</u>				DRILLED BY <u>D. Arquette</u> <u>Geologic, Inc.</u>					
GROUND WATER EL. (Ft.) <u>-116.7</u> DATE <u>03-06-90</u>				LOGGED BY <u>T. Bobowski</u> TOTAL DEPTH (Ft.) <u>45.5</u>				PG. <u>1</u> OF <u>2</u>	

DEPTH FT	SAMPLE				SAMPLE DESCRIPTIONS	FIELD TESTS	STRATUM DESCRIP.	EQUIPMENT INSTALLATION
	TYPE & No	BLOWS /6 IN	PEN IN.	REC IN.				
5	S1	56-60 12-9	24	16	SILTY SAND WITH GRAVEL (SM); mostly fine sand, 5-10% m-c sand, ~25% non-plastic fines, ~20% f-c gravel, organics, brick fragments, brown. (FILL)	PID<1	Fill	Locking stand-pipe with 2.5' stick-up  Cement seal.
					.....		3.0'	
5	S2	8-6 3-4	24	24	NARROWLY GRADED SAND (SP); mostly fine sand, trace med sand, <5% non-plastic fines, slightly stratified, mottled, tan.	PID<1	Narrowly Graded Sand	2.0-inch ID SCH 40 PVC solid riser surrounded by backfill from boring.
					.....		8.0'	
10	S3	8-7 10-11	24	16	WIDELY GRADED SAND WITH GRAVEL (SW); f-m-c sand, mostly fine sand, ~20% f-c subrounded gravel, <5% non-plastic fines, brown.	PID<1	Widely Graded Sand	Bentonite seal: 28.2' to 28.5' Top of screen: 29.5'
15	S4	9-16 16-14	24	16	Top 12": WIDELY GRADED SAND WITH GRAVEL (SW); Similar to S3, mostly med sand.	PID<1	15.0'	
					Bot 6": NARROWLY GRADED SAND (SP); mostly fine sand, <10% non-plastic fines, slightly stratified, tan.		Narrowly Graded Sand	
20	S5	21-19 14-19	24	20	NARROWLY GRADED SAND (SP); Similar to bottom 6" of S4.	PID<1		
25	S6	14-15 22-19	24	20	NARROWLY GRADED SAND (SP); Similar to bottom 6" of S4, trace fine gravel.	PID<1		
	S7	18-22	24	20	NARROWLY GRADED SAND (SP); Similar to S6.	PID<1		


  

REMARKS: 1) Soil headspace vapors monitored with a Photoionization Detector (PID). Values in parts per million (ppm). 2) Boring was advanced with 4.25-inch hollow stem augers to 44.0'.	ENVIRONMENTAL SAMPLING SECOND NASHUA RIVER CROSSING NASHUA, NEW HAMPSHIRE  Date <u>04-10-90</u> Project <u>89414</u>  ♦ GEI CONSULTANTS, INC.
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BLOWS PER 6" - 140 LB HAMMER FALLING 30" TO DRIVE A 2" O.D. SPLIT SPOON SAMPLER PEN - PENETRATION LENGTH OF SAMPLER OR CORE BARREL REC - RECOVERY LENGTH OF SAMPLE RGD - LENGTH OF SOUND CORES > 4" ÷ LENGTH CORED, % S - SPLIT SPOON SAMPLE U - UNDISTURBED SAMPLE UF - FIXED PISTON UO - OSTERBERG	 GROUND WATER
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BOUNDARIES BETWEEN STRATA ARE APPROXIMATE ONLY.

Boring Location See Figure 3						DATE START-FINISH 03-01-90 - 03-02-90		MW#
GROUND ELEVATION (Ft.) 152.0 DATUM LOCAL						DRILLED BY D. Arquette GeoLogic, Inc.		
GROUND WATER EL. (Ft.) 116.7 DATE 03-06-90						LOGGED BY T. Bobowski TOTAL DEPTH (Ft.) 45.5		PG. 2 OF 2
DEPTH FT	SAMPLE				SAMPLE DESCRIPTIONS	FIELD TESTS	STRATUM DESCRIP.	EQUIPMENT INSTALLATION
	TYPE & No	BLOWS /6 IN	PEN IN.	REC IN.				
35	S7	27-24	24	20	NARROWLY GRADED SAND (SP); Similar to S6.	PID<1	Narrowly Graded Sand	2.0-inch ID SCH 40 PVC 0.010-slot screen surrounded by filter sand.    Bottom of screen: 44.5'
	S2	36-75 120	18	12	Top 6": NARROWLY GRADED SAND (SP); Similar to S6.	PID<1	35.0'	
					Bottom 6": WIDELY GRADED SAND WITH GRAVEL (SW) f-m-c sand, ~10% f-c subangular gravel, ~10% non-plastic fines, heterogeneous, brown.	PID<1		
40	S9	4-19 62	18	18	WIDELY GRADED SAND (SW); Similar to bottom 6" of S8, <10% f-c gravel.	PID<1	Widely Graded Sand	
45	S10	13-46 81	18	18	WIDELY GRADED SAND (SW); Similar to S9.	PID<1		
Bottom of Borehole - 45.5'								
50								

**REMARKS:** 1) Soil headspace vapors monitored with a Photoionization Detector (PID). Values in parts per million (ppm). 2) Boring was advanced with 4.25-inch hollow stem augers to 44.0'.

BLOWS PER 6" - 140 LB HAMMER FALLING 30" TO DRIVE A 2" O.D. SPLIT SPOON SAMPLER  
 PEN - PENETRATION LENGTH OF SAMPLER OR CORE BARREL REC - RECOVERY LENGTH OF SAMPLE  
 RGD - LENGTH OF SOUND CORES > 4" ÷ LENGTH CORED, % S - SPLIT SPOON SAMPLE  
 U - UNDISTURBED SAMPLE UF - FIXED PISTON UO - OSTERBERG

BOUNDARIES BETWEEN STRATA ARE APPROXIMATE ONLY.

ENVIRONMENTAL SAMPLING  
SECOND NASHUA RIVER CROSSING  
NASHUA, NEW HAMPSHIRE

Date 04-10-90 Project 89414

GEI CONSULTANTS, INC.

BORING LOCATION <u>See Figure 4</u>				DATE START-FINISH <u>05-24-91</u> - <u>05-28-91</u>				<u>MW103R</u>	
GROUND ELEVATION (Ft.) <u>162.06</u>		DATUM <u>NGVD</u>		DRILLED BY <u>M. Voisine - Capital Envir. Drilling</u>				PG. <u>1</u> OF <u>2</u>	
GROUND WATER EL. (Ft.) <u>128.34</u>		DATE <u>06/06/91</u>		LOGGED BY <u>T. Bobowski</u>		TOTAL DEPTH (Ft.) <u>44.2</u>			
DEPTH FT	SAMPLE TYPE & No	BLOWS /6 IN	PEN IN.	REC IN.	SAMPLE DESCRIPTIONS	FIELD TESTS	STRATUM DESCRIP.	EQUIPMENT INSTALLATION	
					Asphalt		Asphalt	8"x12" Gate box flush w/ ground surface Cement seal.	
5					NO SAMPLES TAKEN FROM GROUND SURFACE TO 20.0' SINCE MW3 IS LOCATED ONLY 11.0' FROM THIS BORING. SEE BORING LOG FOR MW3 IN APPENDIX B OF GEI CONSULTANTS, INC. REPORT ENTITLED "PHASE II - ENVIRONMENTAL SAMPLING, SECOND NASHUA RIVER CROSSING, NASHUA, NEW HAMPSHIRE" DATED MAY 8, 1990.		Fill		
10							~8.0' ..... Narrowly Graded Sand	1.5-inch ID SCH 40 PVC solid riser surrounded by filter sand and natural backfill from 1.0' to 27.0'.	
15							15.5'		
20	S1	18-17 40-54	24	21	WIDELY GRADED SAND WITH GRAVEL (SW); f-m-c sand, mostly fine sand, ~20% f-c subangular gravel, <5% non-plastic fines, slightly stratified, brown.	PID<1	Widely Graded Sand, Gravel, Cobbles, Boulders		
25	S2	14-20 51-60	24	18	WIDELY GRADED SAND WITH GRAVEL (SW); Similar to S1, slightly embedded structure, moist.	PID<1			
					..... Glacial Till (See next page).		~29.0' ..... G. Till	Top of seal: 27.0' Bentonite-cement grout surrounding riser pipe.	
REMARKS: 1) Soil headspace vapors monitored with a Photoionization Detector (PID). Values in parts per million (ppm). 2) Boring was advanced with 4.25-inch hollow stem augers to 32.0', 3-inch ID spin casing from 32.0' to 37.0' and roller bit to 44.2'.							PHASE III ENVIRONMENTAL SAMPLING AND FACILITIES ASSESSMENT SECOND NASHUA RIVER CROSSING NASHUA, NEW HAMPSHIRE		
BLOWS PER 6" - 140 LB HAMMER FALLING 30" TO DRIVE A 2" O.D. SPLIT SPOON SAMPLER PEN - PENETRATION LENGTH OF SAMPLER OR CORE BARREL REC - RECOVERY LENGTH OF SAMPLE RQD - LENGTH OF SOUND CORES > 4" ÷ LENGTH CORED, % S - SPLIT SPOON SAMPLE U - UNDISTURBED SAMPLE UF - FIXED PISTON UO - OSTERBERG							Date <u>02/26/92</u> Project <u>91061</u>		
BOUNDARIES BETWEEN STRATA ARE APPROXIMATE ONLY.							◆ GEI CONSULTANTS, INC.		

BORING LOCATION <u>See Figure 4</u>					DATE START-FINISH <u>05-24-91</u> - <u>05-28-91</u>		MW103R	
GROUND ELEVATION (Ft.) <u>162.06</u>					DATUM <u>NGVD</u>		DRILLED BY <u>M. Voisine - Capital Envir. Drilling</u>	
GROUND WATER EL. (Ft.) <u>128.34</u>					DATE <u>06/06/91</u>		LOGGED BY <u>T. Bobowski</u> TOTAL DEPTH (Ft.) <u>44.2</u>	
							PG. <u>2</u> OF <u>2</u>	

DEPTH FT	SAMPLE				SAMPLE DESCRIPTIONS	FIELD TESTS	STRATUM DESCRIP.	EQUIPMENT INSTALLATION
	TYPE & No	BLOWS /6 IN	PEN IN.	REC IN.				
	S3	16-31 35-73	24	11	SILTY SAND WITH GRAVEL (SM); f-m-c sand, ~15% non-plastic fines, ~20% f-c subangular gravel, embedded structure, gray. (Glacial Till)	PID=1		1.5-inch ID SCH 40 PVC solid riser surrounded by bentonite-cement grout from 27.0' to 35.2'.
					Approximate Top of Bedrock - 34.0' .....		~34.0'	Bottom of seal: 35.2'
35								Top of screen: 37.2'
40					Roller bitted from 34.0' to 44.2'. Could not core due to loss of circulation and deviated casing preventing the core barrel from passing through casing. Formation was relatively hard during drilling.		Bedrock	1.5-inch ID SCH 40 PVC 0.010-inch slot screen surrounded by filter sand.
45								Bottom of screen: 44.2'
50								
55								

REMARKS: 1) Soil headspace vapors monitored with a Photoionization Detector (PID). Values in parts per million (ppm). 2) Boring was advanced with 4.25-inch hollow stem augers to 32.0', 3-inch ID spin casing from 32.0' to 37.0' and roller bit to 44.2'.		PHASE III ENVIRONMENTAL SAMPLING AND FACILITIES ASSESSMENT SECOND NASHUA RIVER CROSSING NASHUA, NEW HAMPSHIRE  Date <u>02/26/92</u> Project <u>91061</u>  ♦ GEI CONSULTANTS, INC.
BLOWS PER 6" - 140 LB HAMMER FALLING 30" TO DRIVE A 2" O.D. SPLIT SPOON SAMPLER PEN - PENETRATION LENGTH OF SAMPLER OR CORE BARREL REC - RECOVERY LENGTH OF SAMPLE RGD - LENGTH OF SOUND CORES > 4" ÷ LENGTH CORED, % S - SPLIT SPOON SAMPLE U - UNDISTURBED SAMPLE UF - FIXED PISTON UO - OSTERBERG  GROUND WATER BOUNDARIES BETWEEN STRATA ARE APPROXIMATE ONLY.		

BORING LOCATION See Figure 4				DATE START-FINISH 05-22-91 - 05-23-91				MW105R	
GROUND ELEVATION (Ft.) 157.01				DATUM NGVD DRILLED BY M. Voisine - Capital Envir. Drilling				PG. 1 OF 2	
GROUND WATER EL. (Ft.) 130.81				DATE 06/06/91 LOGGED BY T. Bobowski TOTAL DEPTH (Ft.) 50.0					
DEPTH FT	SAMPLE TYPE & No	BLOWS /6 IN	PEN IN.	REC IN.	SAMPLE DESCRIPTIONS	FIELD TESTS	STRATUM DESCRIP.	EQUIPMENT INSTALLATION	
	S1	3-4 5-5	24	18	Top 10": SILTY SAND (SM); mostly fine sand, ~20% non-plastic fines, organics, dark brown. (Topsoil)	PID<1	Fill		8"x12" Gate box flush w/ ground surface Cement seal.
					Bot 8": NARROWLY GRADED SAND (SP); fine sand, <5% non-plastic fines, trace med-coarse sand, tan. (Fill)	PID<1			
5	S2	4-4 7-10	24	14	WIDELY GRADED SAND (SW); f-m-c sand, <5% non-plastic fines, Trace fine gravel, homogeneous, light brown.	PID<1	~5.0' .....	Narrowly and Widely Graded Sand	1.5-inch ID SCH 40 PVC solid riser surrounded by bentonite-cement grout from 1.0' to 40.0'.
10	S3	5-8 9-10	24	15	WIDELY GRADED SAND (SW); Similar to S2.	PID<1			
15	S4	7-8 9-10	24	12	WIDELY GRADED SAND (SW); Similar to S2 but with mostly fine sand.	PID=1			
20	S5	17-16 18-20	24	12	NARROWLY GRADED SAND (SP); mostly fine sand, ~10% m-c sand, ~10% non-plastic fines, trace coarse gravel, light brown.	PID<1			
25	S6	21-17 16-13	24	11	WIDELY GRADED SAND (SW); Similar to S2.	PID<1	▼		
	S7	2-1	24	14	Recovered Widely Graded Sand: f-m-c sand. (Wash materials from roller bitting)	PID<1			

REMARKS: 1) Soil headspace vapors monitored with a Photoionization Detector (PID). Values in parts per million (ppm). 2) Boring was advanced with 4.25-inch hollow stem augers to 5.0', 3-inch ID spin casing from 5.0' to 39.0', and NX core to 50.0'.

BLOWS PER 6" - 140 LB HAMMER FALLING 30" TO DRIVE A 2" O.D. SPLIT SPOON SAMPLER  
PEN - PENETRATION LENGTH OF SAMPLER OR CORE BARREL REC - RECOVERY LENGTH OF SAMPLE  
RQD - LENGTH OF SOUND CORES > 4" ÷ LENGTH CORED, % S - SPLIT SPOON SAMPLE  
U - UNDISTURBED SAMPLE UF - FIXED PISTON UO - OSTERBERG  
BOUNDARIES BETWEEN STRATA ARE APPROXIMATE ONLY.

PHASE III  
ENVIRONMENTAL SAMPLING AND  
FACILITIES ASSESSMENT  
SECOND NASHUA RIVER CROSSING  
NASHUA, NEW HAMPSHIRE

Date 02/26/92 Project 91061

GEI CONSULTANTS, INC.

BORING LOCATION <u>See Figure 4</u>				DATE START-FINISH <u>05-22-91</u> - <u>05-23-91</u>				<u>MW105R</u>	
GROUND ELEVATION (Ft.) <u>157.01</u>		DATUM <u>NGVD</u>		DRILLED BY <u>M. Voisine - Capital Envir. Drilling</u>				PG. <u>2</u> OF <u>2</u>	
GROUND WATER EL. (Ft.) <u>130.81</u>		DATE <u>06/06/91</u>		LOGGED BY <u>T. Bobowski</u>		TOTAL DEPTH (Ft.) <u>50.0</u>			

DEPTH FT	SAMPLE				SAMPLE DESCRIPTIONS	FIELD TESTS	STRATUM DESCRIP.	EQUIPMENT INSTALLATION
	TYPE & No	BLOWS /6 IN	PEN IN.	REC IN.				
35	S7	3-4	24	14	Recovered Widely Graded Sand: f-m-c sand, gray. (Wash materials from roller bitting)	PID<1	32.0'	1.5-inch ID SCH 40 PVC solid riser surrounded by bentonite- cement grout from 1.0' to 40.0'.
					.....		Glacial Till	
40	S8	6-5 16- 100	23	13	SILTY SAND WITH GRAVEL (SM); f-m-c sand, ~20% non-plastic fines, ~15% f-c subangular gravel, embedded structure, gray. (Glacial Till)	PID=3	37.0'	Bottom of seal: 40.0'
					Roller bitted from 37.0' to 39.7' to establish circulation for coring.		Bedrock	
45	NX1	RQD= 27%	60	60	GRANITE GNEISS: Medium grained banded texture; slightly foliated <2" thick bands alternating from quartz-rich (white) to biotite-rich (black);  Top 18": mostly massive with near horizontal fractures spaced 3" to 5" apart. Bottom 102": highly fractured at angles <20 degrees from vertical and spaced <2" apart.			Top of screen: 43.0'
	NX2	RQD= 27%	60	60	Secondary mineralization includes chlorite, epidote, and iron oxides primarily observed as fillings to fractures and as coatings on fracture planes.			1.5-inch ID SCH 40 PVC 0.010-inch slot screen surrounded by filter sand.
50					Bottom of Borehole - 50.0'			Bottom of screen: 50.0'
55								

REMARKS: 1) Soil headspace vapors monitored with a Photoionization Detector (PID). Values in parts per million (ppm). 2) Boring was advanced with 4.25-inch hollow stem augers to 5.0', 3-inch ID spin casing from 5.0' to 39.0', and NX core to 50.0'.	PHASE III ENVIRONMENTAL SAMPLING AND FACILITIES ASSESSMENT SECOND NASHUA RIVER CROSSING NASHUA, NEW HAMPSHIRE Date <u>02/26/92</u> Project <u>91061</u>
BLOWS PER 6" - 140 LB HAMMER FALLING 30" TO DRIVE A 2" O.D. SPLIT SPOON SAMPLER PEN - PENETRATION LENGTH OF SAMPLER OR CORE BARREL REC - RECOVERY LENGTH OF SAMPLE RQD - LENGTH OF SOUND CORES > 4" ÷ LENGTH CORED, % S - SPLIT SPOON SAMPLE U - UNDISTURBED SAMPLE UF - FIXED PISTON UO - OSTERBERG BOUNDARIES BETWEEN STRATA ARE APPROXIMATE ONLY.	<div style="text-align: center;">  GROUND WATER         </div> <div style="text-align: right;">  GEI CONSULTANTS, INC.         </div>

1. The first part of the document discusses the importance of maintaining accurate records of all transactions and activities. It emphasizes the need for transparency and accountability in financial reporting.

2. The second part of the document outlines the various methods and techniques used to collect and analyze data. It includes a detailed description of the experimental procedures and the statistical analysis performed.

3. The third part of the document presents the results of the study. It includes a series of tables and graphs that illustrate the findings of the research. The data shows a clear trend of increasing activity over time.

4. The fourth part of the document discusses the implications of the findings. It suggests that the results have significant implications for the field of study and may lead to further research in this area.

5. The fifth part of the document concludes the study. It summarizes the key findings and provides a final statement on the importance of the research.